

Richardson Grove Operational Improvement Project

HUMBOLDT COUNTY, CALIFORNIA
DISTRICT 1 – HUM – 101, PM 1.1/2.2
464800

Draft Environmental Impact Report/ Environmental Assessment and Programmatic Section 4 (f) Evaluation



**Prepared by the
State of California Department of Transportation**

The environmental review, consultation, and any other action required in accordance with applicable Federal laws for this project is being, or has been, carried out by Caltrans under its assumption of responsibility pursuant to 23 U.S.C. 327.



December 2008

GENERAL INFORMATION ABOUT THIS DOCUMENT

What's in this document:

The California Department of Transportation (Department), as assigned by the Federal Highway Administration (FHWA), has prepared this Environmental Impact Report/Environmental Assessment (EIR/EA), which examines the potential environmental impacts of the alternatives being considered for the proposed project located in Humboldt County, California. The document describes why the project is being proposed, alternatives for the project, the existing environment that could be affected by the project, the potential impacts from each of the alternatives, and the proposed avoidance, minimization and/or compensation measures.

What you should do:

- Please read this Environmental Impact Report/Environmental Assessment. Additional copies of this document as well as the technical studies are available for review at Caltrans District Office located at 1656 Union Street, Eureka, CA 95501; Humboldt County Main Library located at 1313 Third Street, Eureka, CA, and Humboldt County Branch Library located at 715 Cedar, Garberville, CA. 95542
- Attend public hearing. Hearing will be held December 15, 2008, at the River Lodge in Fortuna.
- We welcome your comments. If you have any comments regarding the proposed project, please attend the public hearing or send your written comments to the Department by the deadline.
- Submit comments via postal mail to:
Deborah Harmon, Senior Environmental Planner
CA Department of Transportation
1656 Union Street
Eureka, CA 95501
- Submit comments via email to deborah_harmon@dot.ca.gov.
- Submit comments by the deadline: January 23, 2009.

What happens next:

After comments are received from the public and reviewing agencies, the Department, as assigned by the Federal Highway Administration may: (1) give environmental approval to the proposed project, (2) undertake additional environmental studies, or (3) abandon the project. If the project is given environmental approval and funding is appropriated, the Department could design and construct all or part of the project.

For individuals with sensory disabilities, this document can be made available in Braille, large print, on audiocassette, or on computer disk. To obtain a copy in one of these alternate formats, please call or write to Department of Transportation, Attn: Deborah Harmon, Environmental

Planning, 1656 Union Street, Eureka, CA 95501; (707) 445-6431 Voice, or use the California Relay Service 1-800-735-2929 (TTY to Voice), 1-800-735-2922 (Voice to TTY) or 711.

It should be noted that at a future date, the Department acting through FHWA or another federal agency may publish a notice in the Federal Register, pursuant to 23 USC §139(l), indicating that a final action has been taken on this project by the Department or another federal agency. If such notice is published, a lawsuit or other legal claim will be barred unless it is filed within 180 days after the date of publication of the notice (or within such shorter time period as is specified in the Federal laws pursuant to which judicial review of the federal agency action is allowed). If no notice is published, then the lawsuit or claim can be filed as long as the periods of time provided by other Federal laws that govern claims are met.

RICHARDSON GROVE OPERATIONAL IMPROVEMENT PROJECT

US Route 101, in Humboldt County near Garberville from 0.5 miles south to 0.5 miles north of Richardson Grove
Undercrossing

**DRAFT ENVIRONMENTAL IMPACT REPORT/ENVIRONMENTAL ASSESSMENT and
Programmatic Section 4(f) Evaluation**

Submitted Pursuant to: (State) Division 13, California Public Resources Code
(Federal) 42 USC 4332(2)(C) and 49 U.S.C. 303

THE STATE OF CALIFORNIA
Department of Transportation

December 3, 2008

Date of Approval



Charles C. Fielder,
District 1 Director
California Department of Transportation

Summary

The proposed project is a joint project by the California Department of Transportation (Department) and the Federal Highway Administration (FHWA), and is subject to state and federal environmental review requirements. Project documentation, therefore, has been prepared in compliance with both the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). The Department is the lead agency under CEQA. In addition, FHWA's responsibility for environmental review, consultation, and any other action required in accordance with applicable Federal laws for this project is being, or has been, carried out by the Department under its assumption of responsibility pursuant to 23 U.S.C. 327.

Some impacts determined to be significant under CEQA may not lead to a determination of significance under NEPA. Because NEPA is concerned with the significance of the project as a whole, it is quite often the case that a "lower level" document is prepared for NEPA. One of the most commonly seen joint document types is an Environmental Impact Report/Environmental Assessment (EIR/EA).

Following receipt of public comments on the Draft EIR/EA and circulation of the Final EIR/EA, the Department will be required to take actions regarding the environmental document. The Department will determine whether to certify the EIR and issue Findings and a Statement of Overriding Considerations under CEQA and to issue a Finding of No Significant Impact (FONSI) or require an Environmental Impact Statement (EIS) under NEPA.

The purpose of the proposed project is to adjust the roadway alignment to accommodate STAA truck travel, thereby removing the restriction for STAA vehicles, and improve the safety and operation of Route 101 while also improving goods movement. The proposed project which extends from PM 1.1 to PM 2.2, would include minor realignments and widening of the existing roadway, culvert improvements, and repaving the roadway. The posted speed limit would not be raised. The only alternatives under consideration are the preferred alternative and the no build.

The Department proposes to improve a one mile section of US Route 101 from one mile north of the Mendocino/Humboldt County line to approximately eight miles south of the community of Garberville. A portion of the improvements to Route 101 would occur within Richardson Grove State Park. Route 101 is the primary north-south route serving coastal California and is critical to the commerce of northwestern California. Industry standard-sized trucks conforming to the Surface Transportation Assistance Act of 1982 (STAA) are currently prohibited from traveling Route 101 north of Leggett due to the narrow and curvilinear roadway alignment in combination

with large redwood trees adjacent to the traveled way through Richardson Grove. Northwestern California is one of the few remaining areas of the State that STAA trucks are not permitted.

“California Legal” truck configurations, with a 65 foot overall length are allowed to travel on State Highways throughout District 1 (Del Norte, Humboldt, Mendocino, and Lake Counties). STAA truck configurations, as established by the Surface Transportation Assistance Act of 1982, are restricted throughout much of District 1. These STAA vehicles are defined as having either a 48 foot trailer, or as having a 53 foot trailer with a limit of 40 foot distance from kingpin of the cab to the rear axle of the trailer. STAA trucks have been prohibited from this section of Route 101 because the tight radius curves between the large redwood trees make it difficult for the longer trucks to stay within the travel lane without using part of the opposing lane of traffic (“off-tracking”) or traveling off the roadway and using unpaved shoulders.

The existing roadway through Richardson Grove State Park is a narrow two-lane conventional highway facility on a nonstandard alignment with 11 to 12 foot lanes and 0 to 4 foot shoulders averaging less than 2 feet. This one mile section of Route 101 is part of a three mile gap in an otherwise continuous 4-lane freeway/expressway from Cummings in Mendocino County (PM 81.4) to Eureka in Humboldt County (PM 74.6), a distance of 96 miles.

The primary environmental impacts resulting from the proposed project are tree removal resulting from cuts and fills that are necessary to accommodate the highway improvements. Seven redwoods ranging in size from six to sixteen inches at diameter breast height (diameter of the tree trunk 4.5 feet above ground) as well as several Douglas fir trees ranging from four to twenty two inches at diameter breast height are proposed to be removed. In addition, construction would occur within the structural root zone¹ of several large, mature redwoods abutting the existing roadway and the root systems of these trees could be further affected. Construction of a cut slope and a retaining wall north of Richardson Grove State Park would affect the visual setting for residents and visitors to the Singing Trees Recovery Center. Temporary construction impacts would include noise, lights, traffic delays, and interruptions to the view that would affect visitors utilizing the campground, trails, and visitor center at the park.

Coordination with the general public and appropriate public agencies has occurred continuously. Two public meetings in addition to the scoping meeting have been held and advertised in local newspapers. Meetings have also been held with Native American groups and staff from US Fish and Wildlife Service, California Department of Fish and Game, Regional Water Quality Control Board, and California Department of Parks and Recreation.

¹ Structural root zone is a circular area with the tree trunk at the center and a radius equal to three times the diameter of the tree trunk measured at breast height (4.5 feet above ground level). Most of the tree's structural roots would be located within this area. (Department of Parks and Recreation, 2005)

Project approvals will be required from US Fish and Wildlife Service, National Park Service, California Department of Fish and Game, California Department of Parks and Recreation, and California Office of Historic Preservation. Permits will be required from the US Army Corps of Engineers, California Department of Fish and Game, and Regional Water Quality Control Board.

After the public circulation period, all comments will be considered, and the Department will confirm the proposed build alternative and make the final determination of the project's effect on the environment. In accordance with CEQA, the Department will certify that the project complies with CEQA, prepare findings for any significant impacts identified, prepare a Statement of Overriding Considerations for impacts that will not be mitigated below a level of significance, and certify that the findings and Statement of Overriding Considerations have been considered prior to project approval. The Department will then file a Notice of Determination with the State Clearinghouse that will identify whether the project will have significant impacts, mitigation measures were included as conditions of project approval, findings were made, and a Statement of Overriding Considerations was adopted. Similarly, if the Department, as assigned by FHWA, determines the NEPA action does not significantly impact the environment, the Department will issue a Finding of No Significant Impact (FONSI) in accordance with NEPA.

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List of Technical Studies

Initial Site Assessment
 Aerially Deposited Lead Site Investigation Report
 Noise
 Historic Properties Survey Report
 Visual Impact Assessment
 Natural Environment Study
 Biological Assessment
 Economic Study
 Foundation Report
 Revegetation Plan
 Floodplain Evaluation Summary Report
 Community Impacts: Growth Analysis
 Transportation Management Plan
 Energy Analysis

Chapter 1. PROPOSED PROJECT

1.1. INTRODUCTION

The Department of Transportation proposes to improve a one mile section of US Route 101 from one mile north of the Mendocino/Humboldt County line to approximately eight miles south of the community of Garberville (postmile 1.1 to 2.2). A portion of the improvements to Route 101 would occur within Richardson Grove State Park. Route 101 is the primary north-south route serving coastal California and is critical to the commerce of northwestern California. Industry standard-sized trucks conforming to the Surface Transportation Assistance Act of 1982 (STAA) are currently prohibited from traveling Route 101 north of Leggett due to the narrow and curvilinear alignment in combination with large redwood trees adjacent to the traveled way through Richardson Grove. Figures 1 and 2 show project location and vicinity map.

The section of US Route 101 in and around Richardson Grove State Park follows the westerly bank of the South Fork of the Eel River and meanders through a scenic corridor lined by large redwoods, novelty shops, restaurants, service stations, campgrounds, and a drug and alcohol recovery center with cottages. The existing roadway through Richardson Grove State Park, constructed around 1915, is a narrow two-lane conventional highway facility with a posted speed limit of 40 mph. In several locations through the park large, mature redwood trees up to 16 feet in diameter encroach into the shoulders. The trees within the park boundaries restrict sight distance and horizontal clearances, as well as result in small radius curves. North of the park, the roadway consists of two 12-foot lanes with 0-4 foot paved shoulders. This section of Route 101 is part of a three mile gap in an otherwise continuous 4-lane freeway/expressway from Cummings in Mendocino County (PM 81.4) to Eureka in Humboldt County (PM 74.6), a distance of 96 miles.

Current restrictions for STAA trucks are in place primarily because of concerns with ‘off-tracking’ of these longer trucks when they travel around tight curves in proximity to fixed objects (large redwood trees). Off-tracking is the tendency for the rear tires to follow a shorter path than the front tires when turning. Off-tracking may cause the vehicle to clip trees, knock down signs, encroach onto shoulders, or cross into the opposing /adjacent lane of traffic to accommodate the vehicle. The restriction of STAA vehicles at Richardson Grove is the only remaining location on Route 101 restricting access of STAA trucks traveling into Humboldt County. This project would adjust the roadway alignment to allow STAA truck travel and help other large vehicles such as recreational vehicles (RV), buses, trucks, etc. safely travel through Richardson Grove. This improvement in goods movement will help area businesses stay competitive in the marketplace.

This project would be programmed in the 2008 State Highway Operation Protection Plan/Program (SHOPP) for \$5.5 million for construction and \$154,000 for Right of Way for a total of \$5.65 million.

1.2. PURPOSE AND NEED

The purpose of the proposed project is to adjust the roadway alignment so that two STAA trucks passing in opposite directions could be accommodated. By making minor realignment improvements to accommodate STAA trucks the prohibition for STAA vehicles would be removed and the safety and operation of Route 101 would be improved while also improving goods movement.

US Route 101 is part of the California Freeway and Expressway System and is included in the National Highway System. It is classified as a rural principal arterial and this portion of Route 101 is part of the Pacific Coast Bike Route. Route 101 is part of the Strategic Highway Network and is listed as a High Emphasis Route in the Interregional Transportation Strategic Plan.

Route 101 through Richardson Grove is a narrow, two-lane road on a non-standard alignment with 11 to 12 foot lanes and 0 to 4 foot shoulders averaging less than two feet. The roadway alignment meanders through a redwood forest with short or non-existent straight or tangent sections followed by compound, reversing, and variable radius curves. The dimensions of the curves (curve radii) are not constant within the project limits and the tight curves do not meet current design standards. Other features of the roadway which do not meet current design standards include: the shoulder width, distance to a fixed object, stopping sight distance, corner sight distance, and superelevation rate. Superelevation is the tilting of the roadway which results in a banked turn. Inadequate superelevation can cause vehicles to skid as they travel through a curve.

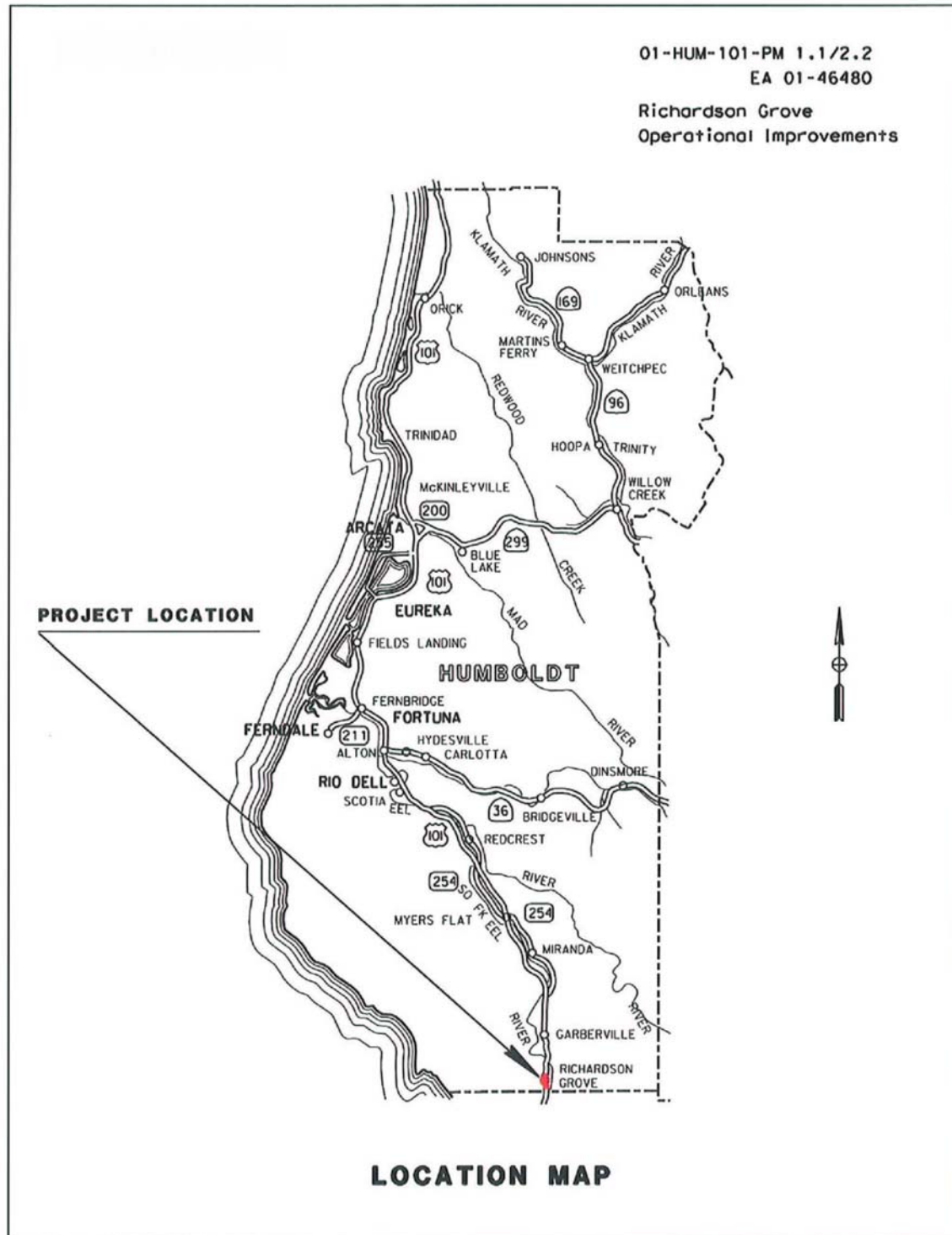
‘California Legal’ truck configurations, with a 65 foot overall length, are allowed to travel on State Highways throughout District 1 (Del Norte, Humboldt, Mendocino, and Lake Counties). STAA truck configurations, as established by the Surface Transportation Assistance Act of 1982, are restricted throughout much of District 1. STAA vehicles are defined as having either a 48-foot trailer, or as having a 53-foot trailer with a limit of 40 feet distance from kingpin of the cab to the rear axle of the trailer (Figure 3). STAA trucks have been prohibited from this section of Route 101 because the tight radius curves between the trees make it difficult for the longer trucks to stay within the travel lane without using part of the opposing lane of traffic (“off-tracking”) or traveling off the roadway and using the shoulders.

One of the most severe curves within the project limits is located at PM 2.1, where lane widths are approximately 12 feet, including shoulder. Computer modeling was done at this curve. The best-case scenario requires the STAA vehicle to travel flush with the outside edge of the paved shoulder. With this best-case scenario, the model still shows STAA vehicles crossing the centerline of the road by a minimum of 0.26 feet on the existing alignment.

According to Humboldt County's 2008 Regional Transportation Plan (RTP), "Truck transport is and will continue to be the primary method of goods movement into, within, and out of Humboldt County." Truck transportation is a major component of many industries doing business in Humboldt County and the north coast. The RTP goes on to state, "Local service trucking represents the largest share of truck traffic, supporting local business and consumer markets. Domestic long-haul trucking provides access to national markets and connections to major goods suppliers. Restrictions on trailers longer than 28 feet at Richardson Grove on US 101 north of Mendocino County and at Buckhorn Summit on SR 299 limit goods movement. These factors increase the need to support the efficient movement of goods for the economic benefit of the County."

Northwestern California is one of the few remaining areas of the State that STAA trucks are not permitted. As these STAA vehicles have become the "national standard," areas that do not have access for these trucks are at an economic disadvantage because truck cargos must be unloaded and transferred to shorter trucks coming into and out of the county, which results in making goods movement more expensive and less timely. In addition, many local businesses must maintain higher inventories due to erratic deliveries and damage during transfers. Local companies with major freight needs have relocated out of the area or gone out of business in part due to transportation problems. According to one study (Cambridge Systematics, Inc. 2003) local businesses and residents pay about 10 to 15 percent more for goods due to poor truck access, increasing the decline of locally-owned retail business out of Humboldt County. Several businesses, including lumber, floral, food and other manufacturing, as well as the local newspaper, have noted higher costs and have considered relocating out of the County.

Figure 1 Project Location Map



location map.dgn 5/13/2008 2:18:04 PM

Figure 2 Project Vicinity Map

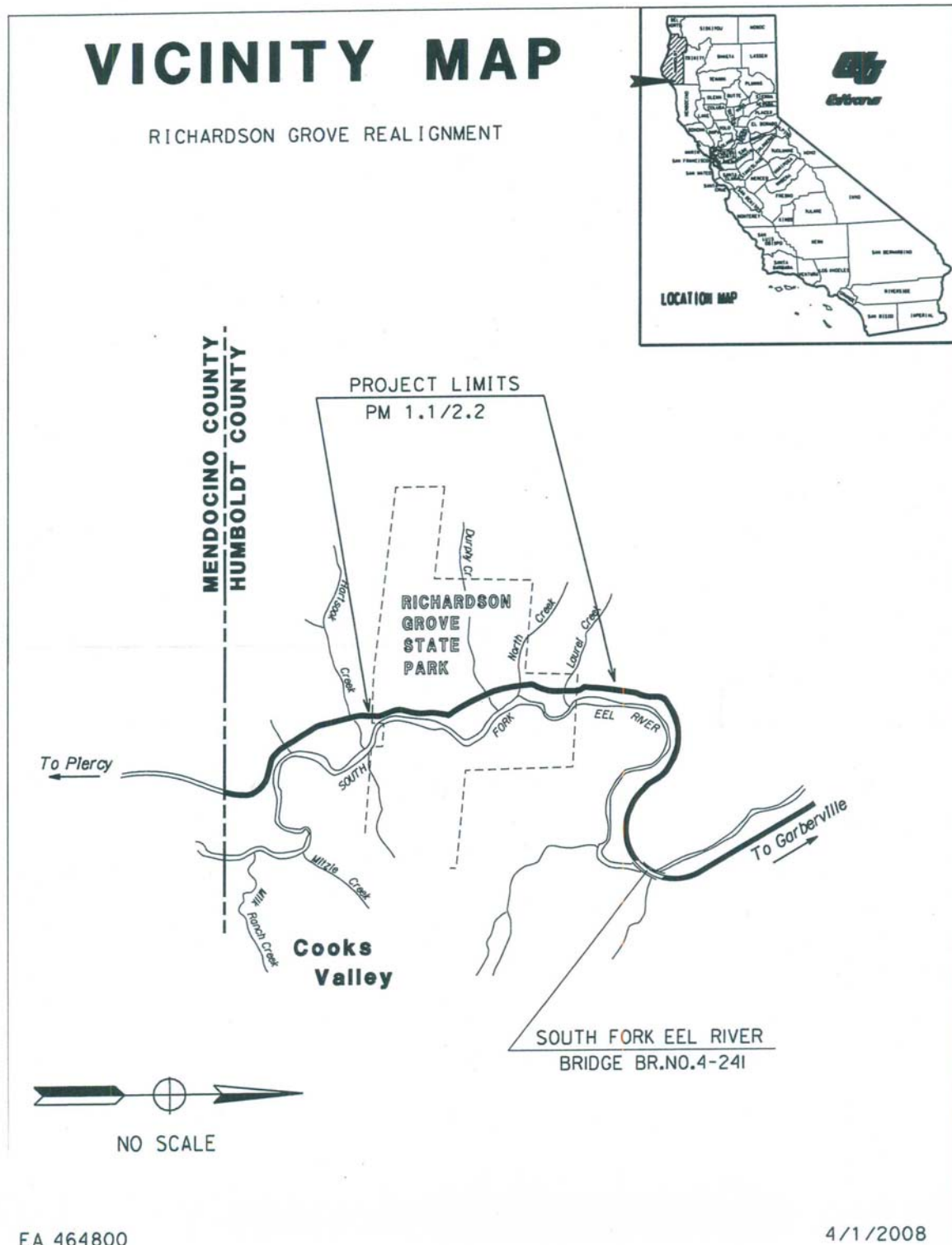
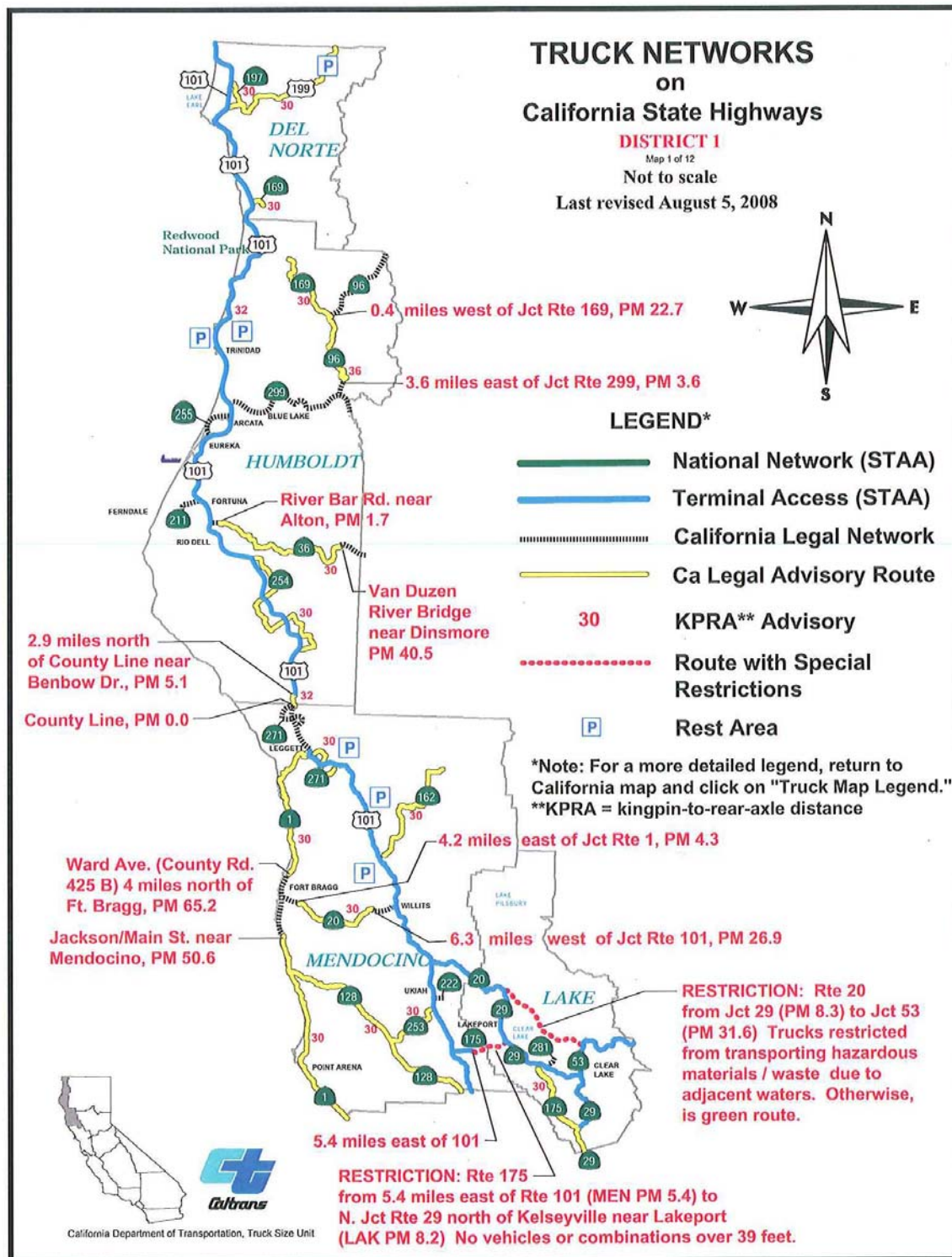



Figure 3 STAA Truck Access Routes In District 1



TRUCK MAP LEGEND TRUCK LENGTHS & ROUTES



STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

 **STAA ROUTES** In California the STAA Network consists of the National Network (green) routes and Terminal Access (blue) routes. STAA trucks (green trucks) are limited to the green and blue routes and use highways "...which provide reasonable access to terminals and facilities for purposes limited to **fuel, food, lodging, and repair** when that access is consistent with safe operation... and when the facility is within **one road mile of identified points of ingress and egress**..." Use of unidentified local streets and roads requires prior approval from local highway authority. See: CVC 35401.5(c)



STAA Truck Tractor - Semitrailer

Semitrailer length : 48 feet maximum
KPRA* : no limit
Overall length : no limit *(KPRA = kingpin-to-rear-axle)



Semitrailer length : over 48 feet up to 53 feet maximum
KPRA : 40 feet maximum for two or more axles,
38 feet maximum for single-axle trailers
Overall length : no limit




STAA Truck Tractor - Semitrailer - Trailer (Doubles)
Trailer length : 28 feet 6 inches maximum (each trailer)
Overall length : no limit



Terminal Access - STAA trucks may travel on State highways that exhibit this sign.



Service Access - STAA trucks may travel up to one road mile from the off ramp to obtain services (food, fuel, lodging, repairs), provided the route displays this sign.

 **CALIFORNIA LEGAL ROUTES** California Legal trucks (black trucks) can travel on STAA routes (green and blue routes), CA Legal routes (black routes), and Advisory routes (yellow routes). CA Legal trucks have access to the entire State highway system except where prohibited (some red routes).



California Legal Truck Tractor - Semitrailer

Semitrailer length : no limit
KPRA : 40 feet maximum for two or more axles,
38 feet maximum for single-axle trailers
Overall length : 65 feet maximum




California Legal Truck Tractor - Semitrailer - Trailer (Doubles)

Option A
Trailer length : 28 feet 6 inches maximum (each trailer)
Overall length : 75 feet maximum
Option B
Trailer length : one trailer 28 feet 6 inches maximum
other trailer may be longer than 28 feet 6 inches
Overall length : 65 feet maximum



CA LEGAL ADVISORY ROUTES - CA Legal trucks only; however, **travel not advised** if KPRA length is over posted value. KPRA advisories range from 30 to 38 feet.

 **SPECIAL RESTRICTIONS** - Route restricted for vehicle length or weight, cargo type, or number of axles.

Another need for the proposed project is based on the fact that the industry standard is the STAA vehicle, thus, the fleet of non-STAA vehicles is aging. According to this same study by Cambridge Systematics, Inc., “Transportation for Economic Development”, truck manufacturers are no longer making non-STAA trailers. As a result, shipping companies must pay extra for custom-made short trailers or incur higher maintenance costs to keep older, short trailers on the road.

There are other local income losses due to the STAA restriction, primarily lost exports. Estimates of lost sales provided by local businesses participating in a survey sponsored by the Humboldt County Workforce Investment Board in 2008 indicated there are four general categories: 1) due to limitations on truck size, a portion of production has to be shifted to out of area subsidiaries; 2) higher truck transportation costs create such a competitive disadvantage that businesses are forced to abandon the attempt to export certain categories of commodities; 3) in some cases shipping delays lead to reduced consumer satisfaction and thus the loss of export markets; and 4) in order to mitigate the impacts of shipping delays on production schedules or sales, there are businesses utilizing a mitigation strategy involving increased inventory.

The realignment improvements would also improve safety for other large vehicles such as motor-homes, buses, and vehicles pulling a trailer. The Humboldt County 2008 Regional Transportation Plan identifies the Richardson Grove Operational Improvement Project in its Action Plan for Goods Movement. The Plan includes Policy GM-5, promote truck route improvements, with the objective of, “Support roadway improvements for commercial vehicle access, and conduct further studies to determine trucking industry needs and options to eliminate barriers to freight movement, and to improve safety along truck routes.” The proposed project was also recommended in the 2002 and 2006 Humboldt County Regional Transportation Plans.

Collision Data

The current and forecasted traffic data on Route 101 within the project limits is summarized in Table 1. It is estimated that trucks compose 11 percent of the traffic.

Table 1 Current and Forecasted Traffic Data

	2007	2008	2018	2028
Annual ADT*	5,410	5,520	6,640	7,750
Peak Hour	930	950	1,140	1,330

*ADT- Average Daily Traffic

A five-year collision history for Route 101 in the project area from April 1, 2002 to March 31, 2007 shows that there were a total of 33 collisions which included 17 injury collisions and 16 which resulted in property damage. Of these 33 collision incidents, 11 involved multi-vehicles. There were no fatalities. A comparison of actual collision rate to the expected statewide rate for a similar facility is summarized in Table 2.

Within the project limits, the five year collision history indicates the actual collision rate is 3.47 collisions per million vehicle miles. Thus, the actual collision rate is twice the expected collision rate for similar roadways. The collisions are fairly evenly split by direction (18 southbound, 15 northbound). Sixteen of the collisions occurred during daylight, fifteen at night, and two occurred at dusk or dawn. The most frequent type of collision listed was “hit object” (22), followed by “rear end” (6). The type of object struck for 11 of the 22 collisions was listed as “trees,” followed by 10 that cited “other vehicle.” The primary collision factors for these collisions were listed as “improper turn” (14) and “speeding” (9). Other factors listed included “fell asleep” and “influence of alcohol.” The road surface was listed as “dry” for over two thirds of the 33 collisions.

Table 2 Comparison of Actual to Expected Statewide Average

	Fatal	Fatal + Injury	Total
Actual	0.00	1.79	3.47
Statewide Average	0.036	0.87	1.73

*Note: 5 year comparison of actual collision rate to statewide average expressed as number of collisions per million vehicle miles for period ending March 31, 2007

According to the collision history, the most common collision is that of errant drivers striking objects, mostly trees. This could be anticipated on a roadway where the highway segments north and south are both four lane high speed freeway/expressways which then transition to a narrow, two lane roadway with a windy alignment with scenic distractions (the forest) and fixed objects (the trees). Both contribute to a condition of a distracted driver in an environment with little to no clear recovery area, impeded sight distance, and a high consequence of error. These factors, non-standard alignment, fixed objects on or near the shoulders, and scenic value of the setting cannot be improved within the scope of the proposed project.

In an earlier study requested by the California Highway Patrol to look at high collision locations in Mendocino and southern Humboldt Counties, the collision rates for the period April 1993 through March 2003 were analyzed. This study, “The Route 101 Safety and Commerce Study”

(2005), found that the five mile segment of Route 101 (PM 0.0 to 5.22) which includes Richardson Grove State Park experienced close to the expected statewide average rate for collisions with a fatality (103%), but exceeded the statewide average for injury + fatal (132%) and for total number of collisions (175%). During this time period, truck traffic made up 14-17% of the total traffic. The annual average daily traffic during the period of this study ranged from 5200 to 5800 vehicles, which is similar to the present conditions. Of the total number of collisions occurring over the course of the study (164), trucks were involved in 26 of the collisions (16%). Of these 26 collisions involving trucks, ten collisions (38%) occurred as a result of hitting an object. The vast majority of these collisions involving trucks (>70%) occurred in clear weather during daylight hours when the pavement was dry.

A speed survey was taken at Richardson Grove as part of the 2005 study resulted in the following findings. At PM 1.19 which has a posted speed of 40 mph, 85% of the traffic traveled at 45 mph. The highest speed recorded was 51 mph, the lowest recorded was 32 mph with the mean speed being 40 mph. At PM 1.67, which is about 200 feet south of the Richardson Grove State Park entrance, the posted speed limit is 40 mph with an advisory speed limit of 30 mph, 85% of the traffic was traveling at 38 mph. The highest recorded speed was 42 mph and the lowest recorded speed was 23 mph, with the mean speed being 34 mph.

Caltrans is considering reducing the posted speed limit through Richardson Grove to 35 mph as an independent action from the proposed operational improvement project. The limits of the speed reduction under consideration extend from PM 1.15 to PM 2.30 which would be just north of Hartsook Inn to just north of the Singing Trees Recovery facility. Lowering the speed, if implemented, should help improve safety and operations of this segment of highway for both motorists as well as providing some improvement for bicyclists.

Roadway improvements being proposed in this project are incremental improvements to the roadway alignment to create smoother curves with superelevations that minimize large vehicle off-tracking conflicts. The proposed project would include upgraded signing and striping and would provide new pavement with an improved friction factor which should help improve safety. At the north end of the project (PM 2.06 to 2.20), four foot shoulders are proposed which should also help improve safety.

Background

The Richardson Grove State Park Bypass Project was originally addressed in a Project Report dated September 27, 1955. That Project Report not only included the immediate Richardson Grove area, but an extensive 43-mile section of Route 101. The California Highway Commission (now the California Transportation Commission) adopted the alignment proposed

by this 1955 Project Report in March 1956. Subsequent studies resulted in the adoption of a new 4-lane freeway/expressway alternative (Alternative A) in the vicinity of Richardson Grove State Park in June 1968. Presently, the entire 43-mile section of Route 101 is now a 4-lane freeway/expressway facility except for an approximately 5.5 mile section that includes the Richardson Grove State Park segment.

As part of a request to District Directors in 2000 by the Director of Caltrans to identify and make recommendations on “long-standing projects,” a feasibility study dated September 13, 2001 was prepared. The Richardson Grove Bypass Feasibility Study evaluated the feasibility of constructing Alternative A that was identified in the previous study as well as two additional 4-lane bypass alternatives of Route 101 through or around the State Park. The study also evaluated an alternative that improved the existing Route 101 alignment to a 4-lane freeway/expressway. This feasibility study was prepared with the coordination of Humboldt County Association of Governments and the Regional Transportation Planning Agencies as a planning document. The bypass alternatives ranged in cost from \$75 - \$600 million for a three to four mile long bypass and included new bridges over the South Fork of the Eel River and an interchange at the south end to connect with State Route 271 and the access to the State Park. These alternatives would result in substantial environmental impacts due to the extensive roadway excavation, removal of large redwoods, disruption to the State Park, visual and water quality impacts as well as impacts to listed species. Improving the existing alignment to a 4-lane facility would require the removal of numerous large redwoods and would not be supported by the California Department of Parks and Recreation. Due to the high costs and substantial environmental impacts, the Feasibility Study concluded all the “build alternatives” were infeasible due to significant engineering, environmental, and economic constraints. The Feasibility Study further recommended that future plans to bypass Richardson Grove State Park be dropped and the Route Concept Report for this section of Route 101 be revised from a 4-lane freeway/expressway facility to a 2-lane conventional highway. This means that problem locations, either due to operational or safety concerns, would need to be addressed on the existing alignment.

The STAA restrictions resulted in interest groups lobbying for Assembly Bill 2426, enacted in 1998 which provided exemptions to the STAA restriction for licensed carriers of livestock that also meet certain length and other criteria. Various other legislative bills have been enacted amending the original bill. Most recently, Senate Bill 773 enacted in October 2007 extended this exemption until January 2012. Moving vans or household goods carriers are also exempted from the STAA restrictions per the California Vehicle Code Section 35401.5(f). These exemptions allow these STAA vehicles to be used without roadway improvements to help protect the safety of the traveling public.

In January of 2004, the Garberville California Highway Patrol (CHP) office requested Caltrans to investigate the number of truck-related incidents along Route 101 from Leggett to Confusion Hill and analyze how those incidents disrupted traffic flow. A Task Force consisting of Caltrans, CHP, Humboldt County, Mendocino County, and the California State Parks was formed to direct the study effort. The study that followed, “Route 101 Safety and Commerce Study- A Report to Improve Safety and Accommodate Commerce on Route 101,” was produced in April 2005. The study found that collisions involving trucks are especially prone to lengthy cleanup which causes significant delay to traffic. The potential exists for hazardous materials to contaminate the Eel River or other environmentally sensitive areas. In addition, these events strain available emergency response resources.

The current project effort began as a Goods Movement Access Feasibility Study in 2006 resulting from the concern with the STAA vehicle restrictions on this segment of Route 101. The goal of this Study was to develop and consider alternative ways of providing safe and economically feasible goods movement, including STAA truck access to Humboldt County. The Study also provided information on the potential for developing an alternative using the existing alignment.

A Technical Advisory Group was formed to provide input into the preparation of the study and the selection of the consultant to perform the Study. The Advisory Group included representatives from Humboldt County Association of Governments, Del Norte Local Transportation Commission, Mendocino Council of Governments, Redwood Region Economic Development Commission, California State Parks, Humboldt County Community Development and Public Works Departments, Save the Redwoods League, California Trucking Association, California Highway Patrol, Humboldt County Cattlemen’s Association, Sierra Club, and California Department of Forestry.

A Stakeholders Group was also formed as part of this effort to provide input on various aspects of the study. The members of this group included State and US legislators or their representatives, local legislators from Crescent City, Del Norte County, and Humboldt County, Humboldt County Community Development Department, Humboldt Auction Yard, Hambro Forest Products, Intertribal Sinkyone Wilderness Council, and Redwood Community Action Agency.

In April 2007, prior to assigning a consultant to begin the study, Caltrans initiated the preliminary surveys and research effort to determine if any improvements could be done on the existing alignment that would eliminate the STAA restriction without removing any large redwood trees. Conceptual designs using the computer software “Autoturn” indicated that such

improvements were possible. There was overall support and consensus for proceeding forward to develop this on-alignment solution from the Technical Advisory Group. The current project discussed in this environmental document is a refinement of that conceptual design. Since the preliminary information indicated improving the existing alignment was feasible, the study efforts to consider alternatives for goods movement was dropped.

Project Description

This section describes the proposed action that was developed by a multi-disciplinary team to achieve the project purpose and need while avoiding or minimizing environmental impacts.

The project is located in Humboldt County on US Route 101 from one mile north of the Mendocino/Humboldt County line (PM 1.1) to approximately 8 miles south of Garberville (PM 2.2). (See Figure 4 Project Features Map) The project is just over one mile in length. Within the limits of the proposed project, Route 101 is a conventional two lane highway with two 12 foot lanes and 0 to 4 foot shoulders.

The project proposes minor realignments and widening of Route 101 to correct STAA restrictions at three locations. The proposed project is broken up into three sections: Segment 1 from PM 1.14 to PM 1.70, Segment 2 from PM 1.70 to PM 2.04, and Segment 3 from PM 2.04 to PM 2.20. The curves restricting STAA access are located in segments 1 and 3. Cuts and fills to accommodate realignments and widening, drainage improvements, repaving, and restriping would occur in segments 1 and 3. Only pavement overlay and restriping with one minor drainage improvement would occur in segment 2. See Figure 5 and layout maps in Appendix L.

1.3. ALTERNATIVES

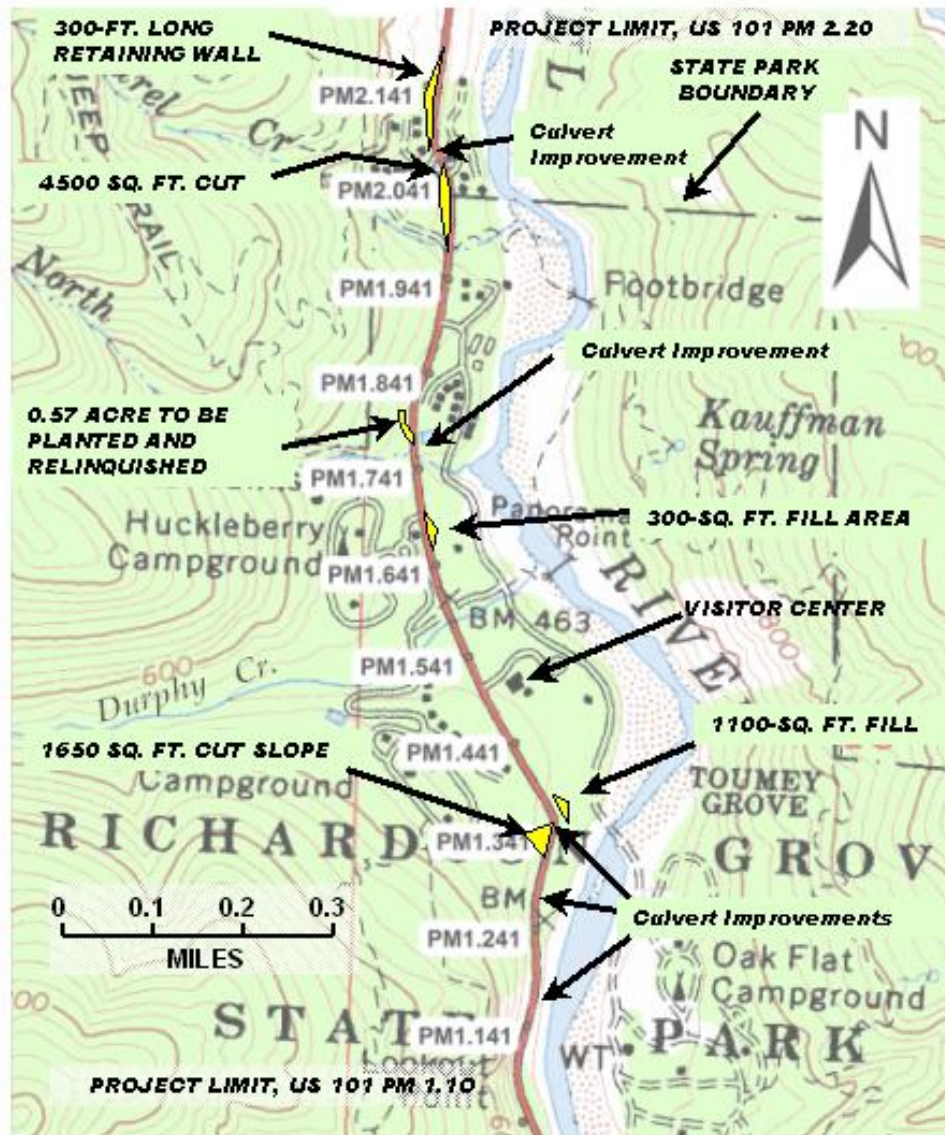
1.3.1. Proposed Build Alternative

The project has been broken into three segments. The first segment includes PM 1.1 to PM 1.7. In this segment there would be minor realignments of the existing roadway to minimize off-tracking conflicts between large vehicles and fixed objects (trees). This work would require minor earthwork, sliver widening of the roadway and adjustments to the super-elevation (to “bank the curves”). The maximum lateral change in the alignment would be 17 feet, but the alignment shift from the existing centerline would be approximately 2 to 6 feet on average.

The main areas of cut and fill include: PM 1.35 to PM 1.36 cut with approximately 300 cubic yards; PM 1.37 to PM 1.39 fill with approximately 200 cubic yards; and PM 1.56 to PM 1.61 fill with approximately 200 cubic yards. The roadway in this segment would be slightly widened to

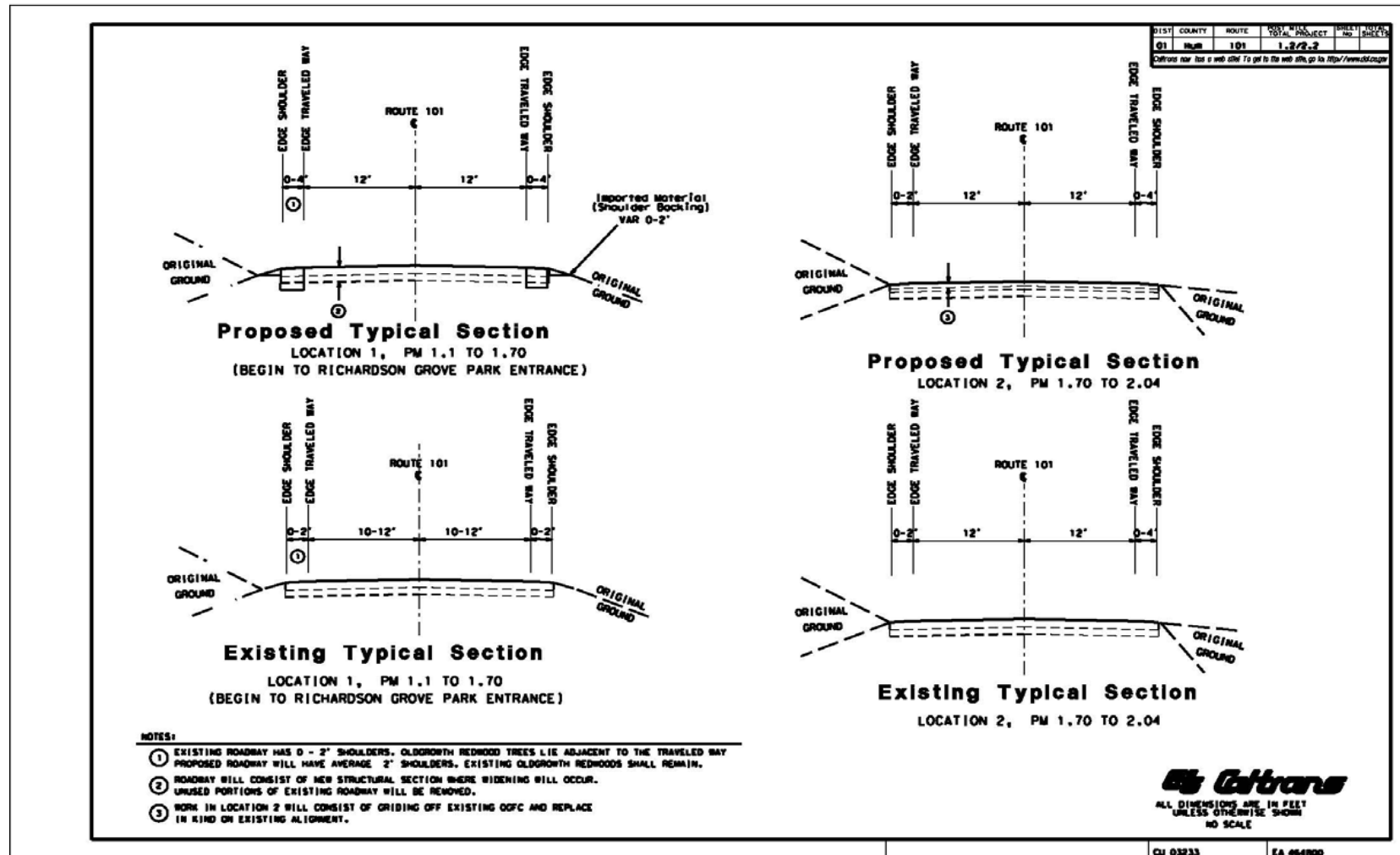
provide for two foot shoulders where possible. Proposed shoulders would be tapered where existing trees are located adjacent to the edge of pavement.

Figure 4 Project Features Map

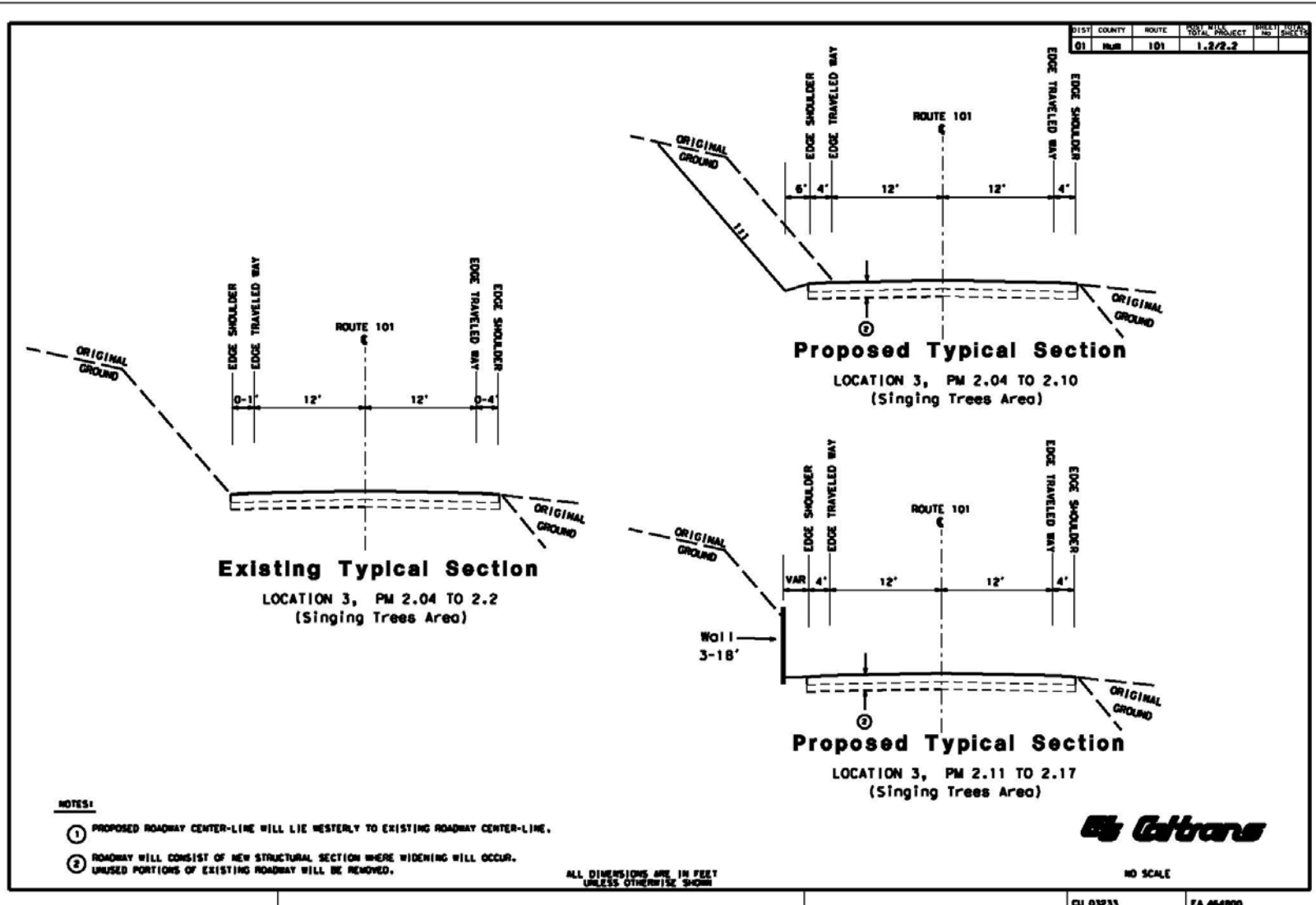


Garberville USGS 7.5 Minute Quadrangle
T6S, R3E, S 11 & 12

Figure 5 Typical Cross Section



x-secx.dgn 12/2/2008 2:04:47 PM



x-secx.dgn 10/17/2008 2:05:51 PM

The 18-inch diameter culverts at PM 1.28 and 1.35 would be replaced with 24-inch diameter culverts. The 18-inch diameter culvert at PM 1.34 would have a liner and an inlet structure installed. The cast-in-place plastic pipe liner is flexible and made of thermosetting resin. The 18-inch diameter culvert at PM 1.18 would be extended and have a new inlet structure constructed, and also have a cast in place flexible liner installed. The existing open graded asphalt would be ground off and a new open graded paving would be placed. Finally, pavement striping would be replaced.

The second segment from PM 1.7 to PM 2.04 involves removing and replacing the existing open graded pavement and striping, and extending a berm to divert water into a down drain to connect to the culvert at PM 1.78. There are no STAA restrictions in this segment, so no realignment or widening is proposed.

The third segment, from PM 2.04 to PM 2.20 would widen the roadway to achieve wider shoulders and realign the roadway to minimize off-tracking conflicts between large vehicles and fixed objects. This work would require a moderate amount of earthwork resulting from two cuts. The cut at PM 2.04 to PM 2.10 would result in approximately 2200 cubic yards of excess material and is across from the Singing Trees facility. The most northerly cut occurs at PM 2.10 to PM 2.17 and would generate approximately 900 cubic yards of excess material.

From PM 2.04 to PM 2.10, two foot shoulders are proposed. For the remainder of this segment, two 4-foot shoulders are proposed. From PM 2.04 to PM 2.10, the proposed alignment would be shifted approximately ten feet into an existing cut slope west of the highway. Between PM 2.10 and PM 2.17 the proposed alignment would be shifted west approximately four feet into an existing cut slope starting north of the Overpacks Grove Resort driveway. The cut at this location would include construction of an approximately 300-foot long soldier pile tieback wall (retaining wall) to minimize tree removal. The wall would be just under 18 feet at its highest point and would taper off on both ends. A little more than half of the wall would rise at least 13 feet above the highway. A concrete safety barrier would be located at the base of the retaining wall. The wall would be located approximately eight feet from the edge of traveled way (fog stripe). In order to construct the retaining wall, the southbound lane would be used as a construction work area. A temporary signal would be installed to facilitate the one way traffic control.

A 24-inch diameter culvert at PM 2.10 would be replaced, a new overside drain installed, and a new inlet structure constructed. A PVC pipe inside the existing culvert that conveys water to the Singing Trees facility would be relocated adjacent to the new culvert. The existing open-graded asphalt would be ground off and new open-graded pavement would be placed. Finally, pavement striping would be replaced.

The majority of excess material generated by the project would be disposed at a site located just south of the project within Caltrans right of way on Route 101 in Mendocino County at PM 106.50. Some material would be reused within the project limits.

The proposed project would also include shoulder backing and updating signs. The majority of disturbed areas would be replanted in kind. Night work construction would likely be utilized for portions of the work to minimize traffic delays during peak traffic. The project would require additional right of way from both private property owners as well as the park. In the park the highway lies within an easement from the California Department of Parks and Recreation and the easement would need to be revised to include both some new areas that would be incorporated into the easement as well as removing some areas from the easement that are no longer needed for operating and maintaining the roadway. Areas that will be removed from the easement would be scarified and replanted.

Construction staging areas will be on the paved roadway and gravel shoulders. One staging area includes the large paved turnout just north of the project limits.

While there is no utility relocation proposed for this project, overhead PG&E power lines that service one residence will need to be temporarily shut off for a few days to accommodate construction of the retaining wall.

The proposed project would require approvals of highway design exceptions including:

- Minimum Design Speed and Curve Radii
- Shoulder Width
- Minimum Superelevation Rate
- Stopping Sight Distance
- Minimum Distance to a Fixed Object
- Corner Sight Distance

Advisory Exceptions would be required for alignment consistency; clearance to a fixed object within Clear Recovery Zone; and Side Slopes steeper than 4:1.

No Build (No Action) Alternative

Route 101 through Richardson Grove is a narrow, two-lane road on a non-standard alignment with 11 to 12 foot lanes with 0 to 4 foot shoulders and many tight curves. STAA trucks are restricted through Richardson Grove due to the physical constraints of the roadway. Non-STAA trucks traversing the Richardson Grove section of Route 101 are often unable to stay within their lane. With the no build alternative the roadway improvements would not occur which could help

lower the collision rate on this segment of Route 101. With the STAA restriction in place, many businesses in Humboldt and Del Norte counties would continue to be at an economic disadvantage.

1.3.2. Alternatives Considered but Eliminated from Further Discussion

Highway Improvement Alternatives

The following highway improvement alternatives were considered:

- Widen at selected locations (areas where STAA trucks off-track)
- Widen to provide a minimum shoulder width of four feet
- Realign short radius curves and widen to provide a minimum four foot shoulder width
- Bypass Alignment of Richardson Grove State Park
- Double deck the highway through Richardson Grove State Park

Widening at selected locations would require removal of several large redwood trees within Richardson Grove State Park since the STAA restrictions are due to the curves that result from the highway weaving between large trees.

Providing a minimum shoulder width of four feet would also require the removal of several large, mature redwoods within the park as these trees are often growing in the shoulder area.

Realigning the curves would require removal of large redwood trees as the curves are a result of missing the trees. Providing a wider shoulder would require removal of more large redwood trees.

A bypass of this section of Route 101 was studied in 2001 but was determined to be infeasible due to the substantial costs and environmental impacts. The surrounding steep terrain would mean any bypass would be required to have substantial cuts and fills. A new alignment would also bisect the park, separating visitor use areas. A bypass would also likely require the removal of several large, mature redwoods where it would connect to the existing highway. A bypass could also require additional bridge over the Eel River.

Double decking the existing highway would also require the removal of large redwoods within the park.

These alternatives were considered infeasible because they would all require removal of large redwood trees in Richardson Grove State Park.

Signalization Alternatives

The following signalization alternatives were considered. Each of these alternatives assumes signals would restrict the current two way traffic configuration to one way, one lane traffic for all day or portions of the day.

- Operate a signal system for one cycle (about 5 minutes) per hour or twice an hour restricting two way traffic. STAA vehicles would be restricted access through this section of Route 101 until the one way traffic was in effect.
- Operate a signal system during night hours only and allow STAA access only when signal is in operation.
- Signalize, allowing alternating one-lane, one-way operation only 24 hours a day.
- Signalize, only stop non-peak direction, leaving the peak direction open to through travel.

A signal system would allow one way operation of this segment of Route 101 to eliminate the problems associated with trucks and RVs being unable to navigate the segment and stay within their own lane. However, there are issues associated with attempting a one-way traffic signal at this location that make these alternatives infeasible. The five issues discussed below would be applicable to each of the four signalization options except the second option of operating the signal only during night. The issue with cycle length would not be as severe if the signal was only in operation at night since traffic should be less than that during the day.

Location -- The stop bars for the signal system would need to be located approximately one mile apart. The stop bar locations are based on the first available area for the signal equipment with the necessary sight distance for operation. Standard methods for traffic detection do not function over this distance. Therefore, the signal system would consist of two separate signal installations consisting of a cabinet, loops, poles, and associated hardware connected through an interconnect cable. The typical location of such a conduit would be under the existing roadway. This trenching would add significant costs as well as potential redwood tree root concerns.

Fixed Time Operation -- Due to the signal being operated with separate controllers, the signals could not utilize traffic actuation, meaning that due to the issues described above under location, the signal could not be activated by the vehicle but would operate in a fixed fashion. Even if no vehicles were present in the opposing lane, signal would have to go through its whole cycle before allowing a vehicle to proceed. The signals would have to operate on a fixed cycle length, though the cycle length could vary with time-of-day based on historical traffic volumes. Fixed

time operation is less efficient than actuated timing. Due to complaints about the waits at fixed time signals in the past, general policy is to require actuated signal systems.

Cycle Length -- Based on the time it takes for vehicles to travel through the limits of one-way traffic operation, the cycle length during minimal traffic flows would be 9-10 minutes. During the daily peak hour flows of 910 vehicles (Caltrans, 2005 Traffic Volumes), the theoretical cycle length would be 34 minutes. This would equate to an average delay of 17 minutes per vehicle. These cycle lengths and delay values are based on actuated signal operation. With fixed time operation, these delay times would increase substantially because a vehicle would have to wait for the whole cycle rather than being able to activate the signal to “go green” if no traffic is present in the opposing lane.

Traffic Queue -- There is potential for the traffic queue to reach 1-2 miles in length or more. The long queues may result in aggravated and impatient motorists as well as noncompliance. The queues could also occasionally block the access to business entrances just south of the project limits including French’s Camp, Legend of the Bigfoot, as well as the Cooks Valley Road intersection. The queues would back up into the four lane freeway sections. An example of this issue occurred during the mid 1990s when a project at Confusion Hill (a project on Route 101 less than ten miles to the south) utilized a temporary one-way traffic signal system. The queues that resulted from this system extended for four miles on weekends back into the four lane section south of Leggett. Since that time it has been the policy of Caltrans to prohibit the use of temporary one-way traffic signals between Leggett and Red Mountain Creek on Route 101. The Richardson Grove section of Route 101 displays similar traffic patterns to those at Confusion Hill, therefore, it would be expected that weekend traffic traveling through a one-way traffic signal system at Richardson Grove would create similarly untenable queues during the summer.

Traffic Safety -- Placing a traffic signal at Richardson Grove would likely cause an increase in the number of rear end accidents in this segment, and could lead to increased propensity for head-on collisions due to impatient motorists trying to pass where unsafe to do so and from motorists entering the highway from driveways within the one-way traffic control limits.

Nighttime Only Signal Operation -- In addition to the non-peak operational concerns mentioned above with the permanent one-way traffic signal systems, a nighttime only system creates its own concerns including:

- STAA vehicles waiting for the nighttime signal to begin operation would need a place to wait.
- Permanent striping of the one-way system would be precluded; consequently, compliance issues mentioned below may be greater than with a permanent signal configuration.

- Initially stopping both directions of traffic to start the one-way operation would likely require labor-intensive flaggers. Providing flaggers negates the lower cost of using a long-term nighttime only signal.
- Signal Heads not being used are required to be covered or turned away from facing traffic. This is another potential labor cost issue.

Compliance -- A major concern is the potential for motorists to ignore the signal system due to long waits at the red signal. These waits would be approximately 5 minutes with light traffic, and could approach 10 to 15 minutes at peak. As this is longer than most signal cycle times, some motorists could conclude that the system is inoperative and proceed against the light. To alleviate this problem, current policy would mandate that the Richardson Grove section of Route 101 be restriped to a single lane configuration to ensure the public's awareness of the one-way nature of this section. However, if the signal were only in operation during the evening hours, this precludes being able to restripe since normal two way traffic would continue during the day.

Safety--Another concern is the driveways and turnouts within the Richardson Grove section of Route 101, especially the access to the park campground and Visitor Center. Ensuring that motorists do not enter Route 101 from these driveways and turnouts and proceed against the green phase direction could be problematic.

Flagging -- Maintenance of some of the system components may require a maintenance flagging operation. A system failure would also require flagging operations. Controlling traffic with flaggers is labor intensive. The response time for flaggers during emergencies could take up to 2 hours. Further, system failures would be extremely difficult to detect. It is possible that it could take a few hours for a system failure to be reported and responded to by California Highway Patrol and added to that would be the response time for Caltrans maintenance staff to arrive to begin flagging.

Time of Day STAA Truck Travel Restrictions

These alternatives considered restricting STAA trucks during certain times of the day:

- STAA truck access at night only
- Separate times for northbound and southbound STAA truck access (could be night only)

The issue with providing STAA access only at night is providing a location for the trucks to wait if they arrive when STAA access is restricted. It also does not alleviate the problem with large

trucks off tracking into the opposing lane since non-STAA vehicles would still be utilizing the highway.

Providing separate times for northbound and southbound STAA trucks would also require space for the truck to wait. It could also be confusing for motorists. This alternative would not alleviate the problem of STAA trucks off tracking into the opposing lane of traffic. In addition, depending upon cycle lengths, it is unlikely that most long-haul truckers could time their deliveries to coincide with the limited access window. This would likely result in additional delays and increases to the haul costs.

Warning Systems (e.g., warning signs, warning lights, reduced speed advisory)

The following alternatives considered utilizing some sort of warning system in to alert motorists that STAA vehicles were present.

- Wide / long truck warning signs (possibly with flashing lights)
- Truck detector (height, weight, length) activated warning system
- Transponder operated truck warning system

Reducing the speed limit and providing dynamic signing that warns advancing motorists may increase motorists' awareness of oncoming vehicles that have less maneuverability and may reduce the severity of potential collisions, but would not justify lifting the restriction for STAA vehicles. A transponder operated truck warning system may assist the operator of the STAA vehicle in being more aware of roadway obstacles. However, these alternatives do not address the physical limitations of the roadway which is the underlying cause of the STAA restriction. Speed reductions, dynamic signing (changeable message signs using radar which can tell motorists their speed), and warning systems are typically used to address existing safety concerns and not used to justify lifting a roadway restriction.

Combination Alternatives

The following alternatives considered combining elements together from the alternatives discussed above:

- Signalization operating only at off-peak
- Highway improvement alternative (shoulder widening), combined with traffic calming (e.g., narrow lane width)
- Highway improvement alternative (selective shoulder widening) combined with truck warning signs
- Time of day truck restrictions in combination with warning system

Signalization even if only in operation during off-peak hours still has the issues discussed previously with the cycle length and delay times, compliance, safety concerns from traffic entering from driveways, and increased collisions. Shoulder widening, whether it be continuous or at spot locations, would require the removal of large redwood trees. Narrowing lanes would not address the issue of off tracking which currently exists. Installing warning signs would not address the issue of off tracking which currently exists. Restricting STAA trucks to certain times of the day does not address the issue of off tracking that currently exists.

1.4. PERMITS AND APPROVALS NEEDED

The following permits, reviews, and approvals would be required for project construction:

Agency	Permit/Approval	Status
United States Fish and Wildlife Service	Section 7 Consultation for Threatened and Endangered Species Review and Comment on 404 Permit	Biological Assessment in review by US Fish and Wildlife Service
United States Army Corps of Engineers	Section 404 Permit for filling or dredging waters of the United States.	404 permit application submitted after final environmental document .
California Department of Fish and Game	1602 Agreement for Streambed Alteration Consistency Determination for Marbled Murrelet under Section 2080.1 of the Fish and Game Code	1602 permit application submitted after final environmental document . Consistency Determination submitted after Section 7 consultation concluded.
Regional Water Quality Control Board	401 Certification National Pollution Discharge Elimination System (NPDES)	Application for Section 401 & Waste Discharge Certification anticipated after final environmental document.
State Office of Historic Preservation	Section 106 Consultation for historic resources Review and Comment on 404 Permit	Concurrence on No Adverse Effect Determination with Standard Conditions In Appendix F.
California Department of Parks and Recreation	Section 4(f) Consultation for impacts to public parklands	Consultation ongoing. Approval obtained prior to final environmental document.
National Park Service	Wild and Scenic River Act Consultation	Consultation ongoing. Approval obtained prior to final environmental document.

Chapter 2. AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, AND AVOIDANCE, MINIMIZATION AND/OR MITIGATION MEASURES

As part of the scoping and environmental analysis conducted for the project, the following topics were considered but no adverse impacts were identified. Consequently, there is no further discussion regarding this issue in this document.

Floodplain- Proposed project is not in any 100-year floodplain, nor would it expose people to a seiche or mudflow. See Appendix H, Floodplain Evaluation Summary.

Farmland- No farmlands, or land under a Williamson Act contract would be affected by the project. No conversion of farmlands to non-agricultural use would occur.

Odor- No objectionable odors affecting a substantial number of people would be created.

Wetlands- No wetlands would be affected with this project.

Wildlife and Fish Migration- Project would not substantially interfere with the movement of fish or wildlife species.

Habitat Conservation Plan- Project would not conflict with the provisions of any adopted Habitat Conservation Plan.

Cultural Resources- Project would not change the significance of any historical or archaeological resources, disturb human remains, nor destroy any unique paleontological site.

Geology- Project would not expose people or structures to earthquake faults, seismic ground shaking, or liquefaction. Project would not result in substantial soil erosion, nor involve septic systems. Project would not result in loss of a known mineral resource.

Hazardous Waste- Project site is not located on Cortese list, nor involve handling hazardous waste within ¼ mile of a school. Project would not interfere with an adopted emergency response plan, nor is it within the vicinity of a private air strip.

Wildfires- Project would not expose people to wildfires.

Water Quality- Project would not substantially alter the existing drainage patterns nor substantially increase the amount of runoff. Project would not exceed waste water treatment requirements of the Regional Water Quality Control Board.

Land Use- Project would not conflict with any applicable land use plan or divide any established communities. Nor would the project expose people to any permanent substantial noise increase or excessive groundborne vibration.

Displacement- Project would not displace existing housing.

Public Services and Utilities- Project would not result in the need for any new or altered government or waste water treatment facilities, nor would it alter the service ratios for fire, police protection, or schools. Nor would the project result in any increased use of neighborhood or regional parks. Project does not require the construction or expansion of recreational facilities. The additional drainage improvements proposed will not cause any significant environmental effects.

Traffic- Project would not result in a change in air traffic patterns, parking capacity, or emergency access. Project would not substantially increase hazards due to a design feature.

Effects on People- Project will not result in substantial adverse effects on people.

2.1. HUMAN ENVIRONMENT

2.1.1. LAND USE

2.1.1.1. Existing and Future Land Use

Humboldt County encompasses approximately 2.3 million acres, 80 percent of which is designated recreation areas and timberland. According to the Redwood Region Economic Development Commission, population density in Humboldt County is 35.4 persons per square mile, while the average density statewide is 217.2 persons per square mile. Nearly 60 percent of the County's population is located in the cities and unincorporated communities surrounding Humboldt Bay.

Most of the project lies within the boundaries of Richardson Grove State Park. The park contains campgrounds, roads and trails, a Visitor Center, and outbuildings. North of the park the land use is commercial and residential. Beyond the project limits, the area is mostly open land including some residential. The nearest community is Garberville, approximately eight miles to the north. South of the project limits, outside the park there is commercial development including burl shops, restaurants, a gas station, and a private campground.

In the Draft General Plan Updates, surrounding area outside the Park is primarily zoned as rural residential, timberland, and commercial. Benbow Lake State Recreation Area is located six miles to the north.

2.1.1.2. Consistency with Regional and Local Plans and Programs

The proposed improvement of Route 101 is consistent with the 2008 Regional Transportation Plan for Humboldt County. The Transportation Plan identifies the Richardson Grove Operational Improvement Project in its Action Plan for Goods Movement.

Between the community of Leggett and the Oregon border, Route 101 has been identified as “eligible” for scenic highway status on the California Scenic Highway System. The proposed project would not affect this status.

2.1.1.3. Wild and Scenic Rivers

Regulatory Setting

Projects affecting Wild and Scenic Rivers are subject to the National Wild and Scenic Rivers Act (16 USC 1271) and the California Wild and Scenic Rivers Act (Pub. Res. Code sec. 5093.50 et seq.).

There are three possible types of Wild and Scenic Designations:

- Wild: undeveloped, with river access by trail only
- Scenic: undeveloped, with occasional river access by road
- Recreational: some development is allowed, with road access

Affected Environment

Route 101 at this location parallels the South Fork of the Eel River, a state and federally designated Wild and Scenic River. The South Fork of the Eel River was designated Wild and Scenic in 1981 from Branscomb to the Eel River confluence. At this location, the Eel River is designated as “recreational” as is two thirds of the river system’s nearly 400 miles. This designation of “recreational” is used for those rivers or segments of rivers that are readily accessible by road or railroads that may have some development along their shorelines and that may have undergone some impoundment or diversion in the past.

Environmental Consequences

The proposed project is not anticipated to have an adverse effect on the free-flowing characteristics of the river, nor alter the river's designation of "recreational." For the most part, within the project area, views of the roadway are screened from the river by vegetation. Measures to protect water quality have been incorporated into the project. Refer to the sections on Water Quality and Wetlands and Other Waters later in this chapter.

The No Build Alternative would not change the status quo and would not have impacts on the factors that make the Eel River Wild and Scenic.

Consultation is ongoing with the River's responsible federal managing agency, the National Park Service. Compliance with the California Wild and Scenic Rivers Act is accomplished via the permitting process by California Department of Fish and Game.

2.1.1.4. Parks and Recreational Facilities

Affected Environment

Richardson Grove State Park is one of eight State Park units located in northern Mendocino/southern Humboldt County area. The park, established in 1922, is approximately 2000 acres and includes large redwood forest, the Eel River, oak woodlands, and grassy meadows. Amenities of the park include nine miles of hiking trails, a picnic area, year round camping, river access for swimming and fishing, and a variety of interpretative/educational programs offered during the summer in association with the campground and visitor center, such as evening campfire programs and guided nature hikes. The park has 170 family campsites in three campgrounds as well as a group campground and sites for cyclists/hikers. The river is a popular spot for swimming and relaxing in the summer and for salmon and steelhead fishing in the winter.

Route 101 bisects the park and three of the campgrounds, Huckleberry, Madrone, and the Dawn Redwoods Group Campground, have campsites located adjacent to the highway (see Figure B1). Portions of some of the trails are established immediately adjacent to the highway. In addition, the visitor center abuts the roadway.

Environmental Consequences

Long term impacts resulting from the proposed project are minimal. Realigning the roadway requires some minor to moderate cuts and fills which would necessitate vegetation removal including some 29 trees of various species. The majority of trees proposed to be removed are tan

oaks up to 12 inches at diameter breast height (dbh)². The largest diameter trees proposed to be removed within the park include one tan oak at 24 inches diameter breast height, and a Big leaf maple and Douglas fir tree, both 22 inches at diameter breast height. For a listing of the trees proposed for removal refer to Table 8. Several trees abutting the existing highway, the majority being redwoods, would also be affected by construction activities. In some cases, the curve improvements would be moving the roadbed slightly closer to the trees, in other instances, the roadbed would be realigned further away from the trees. Construction activities in close proximity to these trees could result in impacts to the root systems of these trees. Trees that may be impacted by construction activities have been identified in Table 9.

There would be impacts to an archaeological site resulting from vegetation removal and placing fill over a portion of the site. Refer to the section on Cultural Resources later in this chapter.

Drainage improvements within the park include two culvert replacements and two culverts which would have liners installed and new inlet structures constructed. A new downdrain would be installed at one additional culvert.

To accommodate the proposed cuts and fills for the roadway realignment shifts would require an additional 0.55 acre to be added to the existing roadway easement that Caltrans has from the State park. The existing Route 101 highway easement would be revised to include these new areas. A portion of the existing easement, about 0.57 acre, would also be relinquished back to the park (i.e., removed from the current transportation easement.) This area to be relinquished used to be the alignment of Route 101, but several years ago the roadway was relocated to its current alignment and the roadbed removed. As part of the current proposed project the area to be relinquished will be revegetated and returned to park jurisdiction.

Temporary construction impacts would include noise, lights, traffic delays, and interruptions to the view that would affect visitors utilizing the campground, trails, and visitor center, as well as motorists traveling through the park. Some construction activities would occur at night. The duration of construction for the overall project is estimated to be just under a year, however, the majority of work within the park is anticipated to occur spring and summer of 2010. Access into the park and the park's maintenance yard would remain open during construction.

The No Build Alternative would not result in vegetation removal or impacts on the cultural resource site. The culverts would likely have to be improved in the near future as an independent project as they deteriorate further.

² Diameter breast height is defined as the diameter of the tree trunk (outside bark) at 4.5 feet above mean ground level (Department of Parks and Recreation, 2005)

Refer to Appendix B, Section 4(f) Evaluation.

Avoidance, Minimization and/or Mitigation Measures

Numerous special conditions have been incorporated into the project to minimize impacting the resources in the park. Refer to Appendix B for a listing of these measures.

2.1.2. GROWTH

Regulatory Setting

The Council on Environmental Quality (CEQ) regulations, which implement the National Environmental Policy Act of 1969, require evaluation of the potential environmental consequences of all proposed federal activities and programs. This provision includes a requirement to examine indirect consequences, which may occur in areas beyond the immediate influence of a proposed action and at some time in the future. The CEQ regulations, 40 CFR 1508.8, refer to these consequences as secondary impacts. Secondary impacts may include changes in land use, economic vitality, and population density, which are all elements of growth.

The California Environmental Quality Act (CEQA) also requires the analysis of a project's potential to induce growth. CEQA guidelines, Section 15126.2(d), require that environmental documents "...discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment..."

Growth inducement may constitute an adverse impact if the growth is not consistent with or accommodated by the affected area's land use plans and growth management policies. Local land use plans provide for land use development patterns and growth policies that allow for the orderly expansion of urban development supported by adequate urban public services, such as water supply, roadway infrastructure, and sewer service. A project that is not consistent with local land use plans could indirectly cause additional adverse environmental impacts and other public service impacts, sometimes referred to as "secondary impacts." A transportation improvement that is growth inducing must directly cause economic or population increases greater than what is planned by the local agency without the project. Thus, to assess whether a growth-inducing project would result in adverse secondary effects, it is important to assess the degree to which the growth accommodated by a project would or would not be consistent with applicable land use plans.

Affected Environment

Information for this section is contained in the report, “Community Impacts: Growth Analysis” (Caltrans, June 2008) and the report, “Realigning Highway 101 at Richardson Grove: The Economic Impact on Humboldt and Del Norte Counties” (Dr. David Gallo, March 2008). In addition, information obtained by two surveys conducted by local agencies were also used. One internet survey was conducted by the Humboldt County Office of Economic Development and another survey was conducted by the Garberville/Redway Chamber of Commerce. These two surveys solicited information from local business owners regarding the impact of STAA restrictions to their businesses.

The total population of Humboldt County was 126,518 in 2000. In 2006 the population was estimated to be 131,361, a slight increase from the 2005 estimate of 131,022. A little more than a third of the County’s population is found in just two cities, Eureka and Arcata. The County population grew by 6.2 percent between 1900 and 2000, which is less than half of the statewide average growth rate of 13.6 percent during the same time period. The County’s population is projected to grow to approximately 141,100 by 2020, an 8.5 percent increase. This rate of population growth is still relatively slow compared to the State overall, which has a projected 25 percent increase in population during the same time period. Principal growth areas will continue to be the cities of Fortuna, Eureka, and Arcata, as well as the unincorporated communities of McKinleyville and Garberville and the area just outside Eureka where adequate services exist to accommodate the anticipated population growth.

Historically, lumber and wood products industry along with sport and commercial fishing dominated the County’s resource-based economy. More recently, Humboldt County has been making the transition from a resource extraction-based economy to a more diversified economy shifting towards education, manufacturing, and tourism. Over the past twenty years there have been substantial job losses in the timber industry and commercial fishing due to a variety of factors. Timber production, which has been an important part of Humboldt County’s economy in the past, remains strong, although it is not as dominant as it has been in the past.

The County experienced an expansion in economic activity from 1985 to 1990, then a slowdown in the early 1990s, which followed a similar pattern in the national recession during this same time period. Overall, total employment grew by 12.7 percent between 1990 and 2000. The strongest growth occurred in the Finance, Insurance, and Real Estate sector, followed by Services sector, Agriculture sector, and Construction and Mining sector. Declines were experienced in the Transportation and Utilities sector, Wholesale Trade sector, and

Manufacturing sector. The sectors with the highest number of jobs in 2000 were Government, Services, and Retail Trade.

In 2006, the total industry employment was estimated at 50,000. The sectors with the highest number of jobs included Government (27.6%), Trade, Transportation, and Utilities (19.8%), Educational and Health Services (11.6%), and Leisure and Hospitality (10.6%). The County unemployment rate in 2006 was 5.6 percent, while the statewide rate was 4.9 percent.

Between 2002 and 2006, it is estimated that employment in industry decreased by 200 jobs in the County. During this period, job losses occurring in manufacturing, educational and health services, professional and business services, and leisure and hospitality were offset somewhat by increases in other sectors, primarily construction and local government.

Humboldt County's labor force has been growing at a faster rate than the County population. This reflects a number of demographic trends such as the lowering of birthrate, the relative aging of the population, and increased labor force participation rates among adults.

Environmental Consequences

In 2008 the STAA restriction on US Route 101 north of Eureka was eliminated. Opening US Route 101 in southern Humboldt County to STAA trucks could have a positive impact on the attractiveness of Humboldt County, and to a lesser extent, Del Norte County to potential investors. As far back as 1989 in a report prepared for the Humboldt County Association of Governments (HCAOG) titled, "The Economic Impacts of Transportation Infrastructure Improvements in Humboldt County" it is noted that "the perception of improved transportation accessibility is key to business attraction, even if the current highway conditions do not, in reality, inhibit a potential business' ability to operate in the County." From this, one could conclude that even minor improvements to Route 101 could potentially increase the attractiveness of areas served by the highway. Increasing the size of trucks on the primary north-south route between San Francisco Bay area and Humboldt County would remove a constraint on business attraction in Humboldt County. More specifically, representatives of the business community in Humboldt County have indicated that the lack of STAA truck access is a disadvantage to doing business.

More recently, The Comprehensive Economic Development Strategy for 1999/2000, prepared by the Humboldt County Office of Economic Development, identifies the constraints on truck lengths on the highways connecting Humboldt County to the interstate highway system as a limitation on the local shipping industry. The document focuses specifically on licensing fees, rather than on carrying capacity. The study concluded the carrying capacity in two 28-foot

trailers is comparable to that in a single 53-foot trailer (the maximum length for STAA semi-trailers), but the licensing fees for a two-trailer system are approximately \$3000 more annually. Those costs are borne by local businesses and most likely passed onto their customers.

While lack of STAA truck access is not the only factor limiting economic development in the area, removing the restriction would likely have positive impacts to the businesses. Caltrans commissioned a study in 2008 in order to assess the disadvantages and potential growth impacts. The study, “Realigning Highway 101 at Richardson Grove: The Economic Impact on Humboldt and Del Norte Counties” (Dr. David Gallo, March 2008) found that transportation costs are currently higher within these counties due to STAA restrictions, however, the removal of these restrictions would not be expected to result in an increase in truck traffic, rather an increase in efficiency. The study cites information from business owners in the region who estimated a reduction in the number of annual truck trips of 12.3 percent if the STAA restrictions through Richardson Grove were lifted. The reduction in the number of trips due to increased efficiency would likely offset any increase in number of trips due to reduced transportation costs, with a result that eliminating STAA restrictions in southern Humboldt County would not significantly change truck traffic.

Another reason why STAA truck traffic is not likely to substantially increase in Humboldt County is due to the types of industry utilizing trucking as a primary goods movement method. A report prepared by Caltrans for the California Senate Transportation Committee titled, “A Study of Various Aspects of Tractor-Semi-trailer Productivity” (January 1986) examined the comparative economic value of STAA trucks’ greater volume. The study analyzed the theory that longer trailers constituted a substantial economic advantage in terms of hauling volume. The study concluded that, when maximum weight is a criterion, the 48-foot semi-trailers allowed under the STAA regulations “are more productive only for high-cube (low density) freight. They are usable for heavier products but, for such goods, are no more productive than the shorter non-STAA trailers.” Meaning, that there is a maximum weight restriction for loads as well as maximum length of cabs and trailers, and that for heavy loads, the economic advantage for the longer vehicles is not present.

Additionally, the total number of trucks utilizing Route 101 would not be likely to change regardless of truck size for routine truck trips, regardless of the vehicle’s volume or the payload’s weight (for instance, weekly or biweekly deliveries from distribution centers to retail outlets). Increasingly, businesses rely upon products delivered to the customer “just in time” rather than warehoused items. Trips of this kind would not likely be affected by the proposed project. This is particularly true in light of economic trends. Truck transport has been declining nationwide

with the rise in fuel prices and many firms are requiring full return payloads in order to maximize fuel economy.

While it does not appear likely that the volume of truck traffic would be substantially increased as a result of the project, it is anticipated that there would be economic benefits to Humboldt County. In response to an internet survey sponsored by Humboldt County Workforce Investment Board in 2008, approximately 39 businesses identified STAA restrictions as contributing to unnecessarily high operating costs. This voluntary anonymous survey indicated that STAA restrictions increase local truck transportation costs for the identified industries by 16.9 percent, which the economic impact study performed by Dr. Gallo approximated amounting to \$5.98 million annually.

The economic costs of not constructing the proposed project would fall on businesses currently located in Humboldt County. However, economic activity and subsequent growth in Humboldt County faces a challenge in the form of distance to markets, with or without the proposed project. Growth within the county has fallen well within planned estimates, particularly within the immediate project area. For example, there were only 350 building permits for the entire county in 2007. The inaccessibility of these areas to longer trucks is not the most important constraint on business development in this portion of northern California. According to the study prepared for Humboldt County Of Associated Governments, major constraints for development include distance from major population centers, lack of direct access to the Interstate road system, lack of a completed four lane north-south or east-west highway, limited air transportation service, unreliable and inadequate rail service, lack of industrial land in Eureka, shortage of labor in some occupations, lack of diversity of tourist attractions and visitor activities, and perception of the area by outsiders as remote (Cambridge Systematics, Inc., 1989)

Growth in the area will be predominately influenced by land and housing costs, zoning, public sentiment, and the political climate of Humboldt County. There are numerous existing environmental, geographical, and political limitations to growth in Humboldt County. The proposed project would reduce transportation costs and improve safety for both commercial and local traffic. To a limited extent, the project would make the communities in Humboldt County, and perhaps Del Norte County, more attractive as places in which to do business. However, the proposed project would not result in significant increases in overall economic productivity in the region. There is nothing to indicate that this project would result in increased, unplanned population growth, nor would there be any direct change to land use as a result of the realignment project. The proposed project is not expected to result in substantial change to the volume of truck traffic on Route 101. Therefore, the proposed project, in and of itself, is not expected to induce unexpected growth or to have a direct growth-inducing effect in the region.

Further, land uses along the Route 101 corridor have remained relatively stable over the past decade. Additional development along the Route 101 corridor is restricted by local land use policies and zoning constraints, as well as be insufficient infrastructure and services. Governing jurisdictions have policies and zoning controls in place to protect the prevalent natural resource areas, open space, and agricultural uses along the corridor. It is unlikely that policy changes or demand for commercial or industrial development will result in changes in the intensity or types of land uses found along the Route 101 corridor in the foreseeable future.

In conclusion, the proposed project, while potentially lifting one constraint to economic growth by feasibly reducing transportation costs, would not be likely to result in any businesses selecting Humboldt County as a place of business, given comparable choices of locations in other communities. However, for some businesses currently located in Humboldt County, the proposed project would be likely to substantially reduce shipping costs and increase profitability, as well as promoting retention of local businesses. Lifting the restrictions on STAA access at Richardson Grove is would not result in a substantial increase in truck traffic or change the intensity or types of land use along the Route 101 corridor.

The No Build Alternative would maintain the restrictions to STAA vehicle access. Businesses in Humboldt County would continue to experience an economic disadvantage as compared to the rest of the state.

2.1.3. COMMUNITY IMPACTS

Regulatory Setting

The National Environmental Policy Act of 1969 as amended (NEPA), established that the federal government use all practicable means to ensure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings [42 U.S.C. 4331(b)(2)]. The Federal Highway Administration in its implementation of NEPA [23 U.S.C. 109(h)] directs that final decisions regarding projects are to be made in the best overall public interest. This requires taking into account adverse environmental impacts, such as, destruction or disruption of human-made resources, community cohesion and the availability of public facilities and services.

Under the California Environmental Quality Act, an economic or social change by itself is not to be considered a significant effect on the environment. However, if a social or economic change is related to a physical change, then social or economic change may be considered in determining whether the physical change is significant. Since this project would result in physical change to the environment, it is appropriate to consider changes to community character and cohesion in assessing the significance of the project's effects.

Affected Environment

Immediately to the south and north of the proposed project area are commercial businesses including burl shops, gas station, and restaurants as well as rural residential land uses. Within the project limits there is the Richardson Grove State Park, the Singing Trees Recovery Center (for alcohol and drug abuse recovery) and a few private residences as well as residences for park staff.

No minority or low-income populations have been identified that would be adversely affected by the proposed project. Therefore, this project is not subject to the provisions of Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.

Environmental Consequences

Singing Trees Recovery Center- Impacts would result primarily from temporary construction impacts. Delays would result from both the temporary signal restricting traffic to one-way to accommodate construction of the proposed retaining wall as well as from delays resulting from one-way traffic staging done by flaggers. The one-way signal would likely be in operation for about six months depending upon weather. One-way traffic staging would be in place periodically throughout the construction. Delays from both the signal and the one-way traffic staging could cause queues to develop that might affect ingress and egress to and from the Center. Maximum delays at the signal and from one-way traffic staging are anticipated to be a maximum of 15 minutes. Access to the Center will be delineated with cones in an attempt to ensure that vehicles in any queues do not block access during construction. Access to the Center would be maintained during construction.

Both the private residents and the clients of the Singing Trees Recovery Center would be affected by noise and night work both from the construction as well as from traffic idling at the signal.

There would also be some long term benefits to the Center as a result of the proposed project. The improved sight distance and wider shoulders at the Singing Trees facility should improve access into this facility. Currently, the staff and owners of the Singing Trees facility do not make left turns into the facility but go up to the park entrance to turn around, in order to approach the facility from the south and make a right turn into the business.

State Park and park staff residences- Impacts would result primarily from temporary construction impacts. Delays would result from both the temporary signal restricting traffic to one-way to

accommodate construction of the proposed retaining wall as well as from delays resulting from one-way traffic staging done by flaggers. The one-way signal would likely be in operation for about six months depending upon weather and would have more of an effect on southbound motorists trying to access the park. One-way traffic staging would be in place periodically throughout the project limits during construction. Delays from both the signal and the one-way traffic staging could cause queues to develop that might affect ingress and egress to and from the park. Maximum delays at the signal and from one-way traffic staging are anticipated to be a maximum of 15 minutes. Access to the park will be delineated with cones in an attempt to ensure that vehicles in any queues do not block access during construction.

Both the campground users and the park staff residents would be affected by noise from night construction. The park staff residences located at the northern perimeter of the park would also be affected by noise from idling traffic at the signal.

Residences- Impacts would result primarily from temporary construction impacts. Delays would result from both the temporary signal restricting traffic to one-way to accommodate construction of the proposed retaining wall as well as from delays resulting from one-way traffic staging done by flaggers. The one-way signal would likely be in operation for about six months depending upon weather. One-way traffic staging would be in place periodically throughout the construction. Delays from both the signal and the one-way traffic staging could cause queues to develop that might affect ingress and egress to and from the residences. Maximum delays at the signal and from one-way traffic staging are anticipated to be a maximum of 15 minutes. Access to the Overpacks Resort facility will be delineated with cones in an attempt to ensure that vehicles in any queues do not block access during construction. Access to the residences would be maintained during construction.

The residents would be affected by noise and night work from both the construction activities as well as from traffic idling at the signal.

Temporary and permanent right of way will be acquired from the two residential properties for the cut slopes that are needed to widen the roadway to provide the four foot shoulders at the northern portion of the proposed project. Power to one of the residences will need to be turned off for one to three days during construction of the retaining wall. Residents will either be supplied with a generator or relocated to a motel for the duration of the power outage.

There would be some long term benefits that result from the project. The wider shoulders and improved sight distance should slightly improve access to the Overpacks Resort facility.

Commercial areas north and south of project limits- Impacts would result primarily from temporary construction impacts. Delays would result from both the temporary signal restricting traffic to one-way to accommodate construction of the proposed retaining wall as well as from delays resulting from one-way traffic staging done by flaggers. The one-way signal would likely be in operation for about six months depending upon weather. One-way traffic staging would be in place periodically throughout the construction. Delays from both the signal and the one-way traffic staging could cause queues to develop that might affect ingress and egress to and from the businesses outside the project limits. Maximum delays at the signal and from one-way traffic staging are anticipated to be a maximum of 15 minutes. Access to the businesses will be delineated with cones in an attempt to ensure that vehicles in any queues do not block access during construction.

Businesses currently providing the service of providing the California Legal trucks (non-STAA) would likely experience a decrease in demand for their vehicles.

The No Build Alternative would have minimum impacts on the businesses and residences within the project limits. The demand for non-STAA vehicles would remain the same.

Avoidance, Minimization and/or Mitigation Measures

Access to residences and businesses will be maintained at all times. If work or traffic queues extend through a driveway, additional traffic control will be required.

2.1.4. UTILITIES / EMERGENCY SERVICES

Affected Environment

Within the project limits the only utility within the Route 101 right of way is PG & E. Additionally, there is a water line servicing one residence that goes through the highway culvert at PM 2.10.

Environmental Consequences

Construction of the retaining wall at the northerly terminus of the project would require that a 12KV PG&E line providing power to one residence and the existing flashing beacon advisory sign be de-energized for a maximum of three days. Removal of the power is necessary when the drill rig used for the wall construction is within 10 feet of the power line.

Emergency service providers such as the Sheriff Department, ambulances, Fire and Rescue, and California Highway Patrol could be affected during construction caused by the one way traffic

control or short road closures. However, emergency service vehicles will be given priority clearance through the work zone when responding to calls.

The No Build Alternative would have no impact on the existing utilities and emergency services.

Avoidance, Minimization and/or Mitigation Measures

Compensation for the residence that would be affected by the de-energizing of the power line would include either providing the residence with a portable generator or relocating the residents to a motel for the period of the anticipated power outage.

Any emergency service agency whose ability to respond to incidents will be affected by any lane closure will be notified prior to that closure. The contractor will be required to prepare a contingency plan for reopening closures to public traffic due to unanticipated delays, and emergencies.

2.1.5. TRAFFIC AND TRANSPORTATION/PEDESTRIAN AND BICYCLE FACILITIES

The traffic section discusses the project's impacts on traffic and circulation, both during construction (construction impacts) and after completion of the project (long-term impacts).

Note: Recreational trails are covered under the Parks and Recreation section of the document.

Regulatory Setting

The Department, as assigned by FHWA, directs that full consideration should be given to the safe accommodation of pedestrians and bicyclists during the development of federal-aid highway projects (see 23 CFR 652). It further directs that the special needs of the elderly and the disabled must be considered in all federal-aid projects that include pedestrian facilities. When current or anticipated pedestrian and/or bicycle traffic presents a potential conflict with motor vehicle traffic, every effort must be made to minimize the detrimental effects on all highway users who share the facility.

The Department is committed to carrying out the 1990 Americans with Disabilities Act (ADA) by building transportation facilities that provide equal access for all persons. The same degree of convenience, accessibility, and safety available to the general public will be provided to persons with disabilities.

Affected Environment

The current roadway geometrics do not meet current design standards for design speed, curve radii, shoulder width, superelevation rates, stopping sight and corner sight distance, distance to a fixed object, steepness of side slopes, and alignment consistency.

Humboldt County has truck restrictions on each of the state highways serving the county. The primary routes into and out of the county used by commercial trucks are US Route 101 for north/south traffic and SR 299 for east/west traffic. Advisory routes at two locations limit the king-pin-to-rear-axle (KPRA) length in and out of the Humboldt Bay region to 32 feet or less: on SR 299 to the east at Buckhorn Summit and on US 101 at Richardson Grove (See Figure 3). These highways provide adequate facilities and level of service for their operations, however, the narrow, windy sections of these highways that prevent larger trailers from entering the county increase shipping costs for both imported and exported goods.

The Humboldt County Office of Economic Development, in the report, “The Comprehensive Economic Development Strategy for 1999/2000,” identifies the constraints on truck lengths on the highways connecting Humboldt County to the interstate highway system as a limitation on the local shipping industry. This report focuses specifically on licensing fees, rather than on carrying capacity. The study concluded the carrying capacity in two 28-foot trailers is comparable to that in a single 53-foot trailer, but the licensing fees for a two-trailer system are approximately \$3,000 more annually. Those costs are borne by local businesses and most likely passed on to their customers.

According to the 2008 Humboldt County Regional Transportation Plan (RTP), a major portion of truck traffic in the County is from timber industry operations. Representatives from the timber industry have indicated that using longer trailers would help cut transportation costs. Trucking companies operating trucks with two 28-foot trailers are carrying about the same capacity as a 53-foot trailer, but their operating costs are much higher. The RTP goes further to state that the truck length restrictions and backhaul opportunities in Humboldt County are preventing businesses from being profitable and competitive with other similar business along the west coast. Stakeholders have noted that truck length restrictions effectively result in an increase in the number of trucks they are forced to run in and out of the County.

The railroad line from Sonoma County to the city of Eureka has not been in operation since 1998, when a Federal Railroad Administration (FRA) Emergency Order mandated the cessation of all railroad operations on this line due to damages accrued during storm events. When in operation, the railroad was an important transportation link to markets and distribution systems south of Humboldt County. Timber, lumber, and pulp producers utilized rail transportation in

the past as a supplement to trucking. Additionally, some of the products used in paper manufacturing have been imported to Humboldt County via the rail line. When in operation, freight service was provided five days a week.

The North Coast Railroad Authority (NCRA) prepared a “Strategic Plan” in April 2001 projecting that the railroad would begin collecting revenues from the provision of freight and excursion services in 2008. Currently, NCRA is not operating any trains on the rail line. NCRA anticipates beginning freight service between Willits and the San Francisco Bay Area beginning in 2008, however, currently, there is no estimated date for resumption of train service north of Willits.

This section of Route 101 is part of the Pacific Coast Bike Route. However, Route 101 within the project limits is currently on nonstandard alignment with generally 0 to 2 foot shoulders. Due to the narrow lanes and shoulders, lack of sight distance due to the curvilinear roadway and numerous trees growing in or just off the shoulder, bicyclist and pedestrian use through the park is compromised. In addition, larger vehicles often utilize the shoulders through the tight turns in the park and leaf debris (duff) generally covers most of the paved shoulders in the park making use by bicyclists and pedestrians less desirable.

Environmental Consequences

During construction of the retaining wall there would be a period of approximately six months where a one-way signal system would be in place. During paving activities and some cut and fill activities one-way traffic staging would also be in place. Delay times would typically average 15 minutes under normal circumstances.

Some of the issues identified under the signalization alternatives considered but eliminated from further discussion would be present for this temporary signal as well. The major difference between the temporary signal and those described previously, is the work area is short enough (a few hundred yards) that an actuated signal can be used rather than the fixed time cycle that would be required to be utilized if the whole one mile length of the project is being controlled by the signal. There would still be delays and resulting traffic queues, but with the much shortened length of roadway under signal control, it would take vehicles much less time to get through the area under one-way traffic control and the delays and queues would be much shorter. There would still be the potential for increased number of rear end collisions similar to the other signalization alternatives as well. However, the park entrance and other park access roads would not be within the area of the one-way traffic control of the signal. There is the potential that the driveway access of the Singing Trees Recovery Center and the Overpacks Resort would still be within the one-way controlled traffic area of the signal.

Outside the park boundaries, the proposed shoulder widening should provide some improvement for bicyclists and pedestrians. Due to the presence of sensitive resources immediately adjacent to the highway, widening the road to provide four foot shoulders within the park is not being proposed. The project would not appreciably improve the existing conditions for bicyclists and pedestrians, neither would it decrease the conditions that currently exist.

Caltrans is also considering reducing the existing posted speed limit of 40 mph through Richardson Grove to 35 mph as an independent action from the proposed operational improvement project. The limits of the speed reduction under consideration extend from PM 1.15 to PM 2.30 which would be just north of Hartsook Inn to just north of the Singing Trees Recovery facility.

Caltrans has proposed several improvements on Routes 197 and 199 in Del Norte County that, if implemented, would lift restrictions for STAA access on these routes. The environmental studies for these improvements are currently ongoing. Caltrans has also proposed improvement to Route 299 at Buckhorn.

The No Build Alternative would have minimal impact on the existing transportation system.

Avoidance, Minimization and/or Mitigation Measures

In order to ensure that impact to the traffic circulation is minimized during construction, the following measures listed below will be in place.

The full width of the traveled way shall be open for use by the public traffic on designated legal holidays, the day preceding designated legal holidays, and when construction operations are not actively in progress. If a legal holiday falls on a Monday, the full width of the traveled way except for northerly portion of the project limits with the signal and one-way traffic (segment 3 as described in the “Alternatives” section), shall be open from the preceding Friday through the holiday.

The full width of the traveled way, except for segment 3 when the signal and one-way traffic is in place, shall be open for use by the public traffic from the proceeding Friday to the following Monday for the following events:

- Annual Redwood Run and Music Festival held the second weekend in June
- Fortuna Redwood AutoXpo the last weekend in July

- Annual Reggae on the River and/or Reggae Rising Festival held the first weekend in August (for this event lane closure restrictions are in effect from Thursday to Monday)
- Annual Earthdance Festival held the third weekend in September.

During one-way traffic control, bicycles and pedestrians shall be directed through the work area using a pilot vehicle, wherever a 12 foot - wide traveled lane with a 4 foot contiguous paved shoulder is not available. Signage shall be used at each end of the construction area to alert bicyclists and pedestrians of the requirement to obtain instruction from designated traffic control personnel. Queue times shall not be longer than 15 minutes.

Access to side roads and residences will be maintained at all times. When work or traffic queues extend through an intersection, additional traffic control will be required at the intersection.

Work shall be coordinated with the local busing system (including school buses and public systems) to minimize impact on their bus schedules.

Bicycles shall be accommodated through the work zone during construction.

Caltrans shall provide information to residents and businesses before and during project work that may represent a disruption to commerce and travel surrounding the zone of construction.

2.1.6. VISUAL / AESTHETICS

Regulatory Setting

The National Environmental Policy Act of 1969 as amended (NEPA) establishes that the federal government use all practicable means to ensure all Americans safe, healthful, productive, and *aesthetically* (emphasis added) and culturally pleasing surroundings [42 U.S.C. 4331(b)(2)]. To further emphasize this point, the Federal Highway administration in its implementation of NEPA [23 U.S.C. 109(h)] directs that final decisions regarding projects are to be made in the best overall public interest taking into account adverse environmental impacts, including among others, the destruction or disruption of aesthetic values.

Likewise, the California Environmental Quality Act (CEQA) establishes that it is the policy of the state to take all action necessary to provide the people of the state “with...enjoyment of *aesthetic*, natural, scenic and historic environmental qualities.” [CA Public Resources Code Section 21001(b)]

Affected Environment

A Visual Impact Assessment (Caltrans, May 2008) was prepared for the proposed project. The setting of the proposed project is as follows. Route 101 is located on the top of a bluff overlooking the South Fork of the Eel River to the northeast and at the base of a mountain ridge to the southwest. The Eel River has been designated as a Wild and Scenic River at the State and Federal level. Views of the Eel River are only available at the northerly limits of the project area due to the densely forested areas between the River and the highway. From the town of Leggett south of the project area to the Oregon border, Route 101 is identified as 'Eligible' for scenic highway status on the California Scenic Highway System, although it is not officially designated as such. Route 101 within the project limits traverses through two visually distinct vegetation communities: mature redwood forest and conifer/oak woodlands. (See Figures 6 and 7) The redwood forest community is found within Richardson Grove State Park and the conifer/oak woodland community is present in the northerly portion of the project, primarily found outside the park boundary. The views of native vegetation throughout the project limits is interspersed with man-made structures abutting the highway such as the Visitor Center and park staff residences within the park and the Singing Trees Recovery Center outside the park.

The highway through the park is narrow and tightly winds through the redwood forest. In several places large redwood trees over twenty feet in diameter are located immediately adjacent to the edge of the highway and draw the attention of visitors who travel this section of Route 101. Small forest canopy openings provide partial sunlight that illuminate the dark, dense forest floor. (See Figure 7)

Environmental Consequences

Of the overall one mile length of the project limits, changes to the existing alignment are proposed for slightly more than one half and would occur between PM 1.14 / 1.70 (segment 1) and PM 2.04/ 2.20 (segment 3). A majority of the proposed improvements consist of subtle realignments of the roadway to improve curve radii. The roadway alignment is proposed to be shifted 1 to 6 feet from the existing centerline in most cases, with an overall average of 2 feet. The maximum realignment would shift the centerline 17 feet.

Segment 1: Existing vegetation located where cut and fill slopes are proposed would be removed prior to grading. Impacts to the existing visual setting due to vegetation removal would be low and these impacts would diminish even further over time as revegetation matures and natural forest regeneration occurs. Between PM 1.33 and 1.35 the highway alignment would be shifted 10 feet to the west avoiding the cluster of large redwood trees. The dominant visual resource in this area is the dense stand of redwoods. Thus, the vegetation removal on the cut slope would

not be as noticeable. Between PM 1.35 and PM 1.41 the proposed realignment would closely mimic the original alignment. Although the fill requires some tree removal, the dense redwood forest would still be the dominant visual feature of this section of the roadway.

The views of the project area by park users would primarily occur adjacent to the visitor center, campground areas, and from portions of two trails that run parallel to the highway. Much of the vegetation removal proposed in Segment 1 would only be visible from a portion of the trail.

Segment 2: The only work proposed is placing new asphalt paving, restriping, and extending an existing berm to divert water to a downdrain to connect to the culvert at PM 1.78. No other activities such as widening, shoulders, or new cut/fill slopes are proposed for this segment, thus no existing vegetation would be removed. There would be no impacts to the existing visual setting in this area.

Segment 3: Two cut slopes are proposed in this segment. The first, occurring between PM 2.04 and PM 2.10, would shift the alignment 10 feet into an existing cut slope. The surface of the proposed cut would rise 15 feet uphill at its highest point from the roadway and would be 300 feet in length. The proposed top of cut would be 25 feet from the nearest of the two cabins (park residences) located at the top of the slope (Figure 7B). The cut would require removing all the vegetation on the proposed cut slope including trees, shrubs, and sparse ground cover. This area is south of the Overpacks Grove Resort driveway and marks the transition between the dense redwood viewscape prevalent in Richardson Grove State Park to the south and the commercial and residential landscape at this location and extending to the north. The loss of vegetation would cause the cabin structures at the top of the slope to be more clearly visible from the roadway, however, the Singing Trees facility directly abuts the highway at this location so the natural visual setting is already compromised. Although there are some large redwoods within the Singing Trees Recovery Center property, most of the large redwoods in this area were cut over the past century.

While a portion of this cut occurs within the park, the use in this area of the park is residences for park staff. The vegetation removal would not likely be viewed by park visitors except those traveling along the highway.

The most northerly cut would occur north of the Overpacks Grove Resort driveway between PM 2.10 and PM 2.20 and includes construction of a 300 foot long soldier pile tieback wall. The proposed retaining wall would be 17 feet at its highest point and would taper at each end. At its lowest point, the wall would be 7 feet above the highway and little more than half of the wall would be at least 13 feet above the highway. The retaining wall would be a soldier pile wall with timber lagging (See Figure 8). A concrete safety barrier would be located at the base of the

retaining wall for the entire length of the wall. Similar retaining walls have been constructed alongside Route 101 in other State park units. The retaining wall may be visible from one or more of the park residences located at the northern boundary of the park, but there are several trees that would screen the view from the residences. The wall would also be visible from the Singing Trees Center property. Removal of the majority of vegetation at this location and the addition of the wall would be an adverse visual impact, however, it would not be a significant impact due to the lack of sensitive visual resources at this location.

The proposed retaining wall would not be visible from the Eel River due to the existing vegetation on the slope below the roadway, therefore there would be no visual impacts from the cut slopes for recreationists on the River.

The No Build Alternative would not result in any impacts to the present visual setting.

Avoidance, Minimization, and/or Mitigation Measures

Disturbed areas would be revegetated. The revegetation goal is to establish self-sustaining native vegetation cover in all strata similar to the pre-project conditions in the impacted areas. The revegetation activities will consist of application of local native mulch for erosion control on disturbed soils and locally appropriate container and/or salvaged native plants. Within the park, trees that are removed would be chipped to provide the local native mulch in addition to any salvaged duff.

The top 4 inches of duff (redwood tree litter) shall be removed, stored at a staging area location and subsequently spread out on exposed disturbed soils within the park boundary. Spreading the duff on the disturbed slopes would mask visual cues that recent construction activities have occurred.

Construction of the retaining wall preserves approximately 33 trees on the upper slope of the proposed cut. The type of retaining wall is designed to blend in aesthetically as possible as well as to be compatible with other walls constructed within the State Parks along Route 101.

Ferns and other shrubs will be salvaged when possible and replanted onsite.

Figure 6A Photo of Route 101



View of Route 101- Redwood forest within Richardson Grove State Park at PM 1.36
looking north

Figure 6B Photo of Route 101



View of Route 101 showing large redwoods abutting highway

Figure 7A Photo of Route 101 in Richardson Grove State Park



View of Route 101, looking south showing big leaf maple, Douglas fir, and tan oak at PM 1.36, a location where a proposed slope cut is to occur

Figure 7B Photo of Route 101 just north of Richardson Grove State Park



Route 101 at PM 2.06- View of oak woodland looking south towards the park at the location of one of the proposed cuts just north of the park boundary

Figure 8 Similar Type Retaining Wall found on Route 101 in Del Norte County



Similar design of soldier pile retaining wall with timber lagging as proposed for PM 2.10 to PM 2.20. The wall above is located on Route 101 in Del Norte Redwoods State Park and is similar in height and materials.

2.1.7. CULTURAL RESOURCES

Regulatory Setting

“Cultural resources” as used in this document refers to all historical and archaeological resources, regardless of significance. Laws and regulations dealing with cultural resources include:

The National Historic Preservation Act of 1966, as amended, (NHPA) sets forth national policy and procedures regarding historic properties, defined as districts, sites, buildings, structures, and objects included in or eligible for the National Register of Historic Places. Section 106 of NHPA requires federal agencies to take into account the effects of their undertakings on such properties and to allow the Advisory Council on Historic Preservation the opportunity to comment on those undertakings, following regulations issued by the Advisory Council on Historic Preservation (36 CFR 800). On January 1, 2004, a Section 106 Programmatic Agreement (PA) between the Advisory Council, FHWA, State Historic Preservation Officer (SHPO), and the Department went into effect for Department projects, both state and local, with FHWA involvement. The PA implements the Advisory Council’s regulations, 36 CFR 800, streamlining the Section 106 process and delegating certain responsibilities to the Department. The FHWA’s responsibilities under the PA have been assigned to the Department as part of the Surface Transportation Project Delivery Pilot Program (23 CFR 773) (July 1, 2007).

Historical resources are considered under the California Environmental Quality Act (CEQA), as well as California Public Resources Code (PRC) Section 5024.1, which established the California Register of Historical Resources. PRC Section 5024 requires state agencies to identify and protect state-owned resources that meet National Register of Historic Places listing criteria. It further specifically requires the Department to inventory state-owned structures in its rights-of-way.

Affected Environment

A Historic Property Survey Report (HPSR) (Caltrans, February 2008) was prepared for this project that summarizes the results of the record search, the archaeological field survey, the historic architectural evaluation, the Extended Phase I Investigation, and the Native American consultation efforts. This report considered potential direct and indirect impacts to cultural resources including historic resources, prehistoric resources, and traditional cultural properties. The Area of Potential Effects (APE) for the proposed project includes the existing and proposed right of way and areas under existing easement, areas of new permanent easement, and areas of temporary easement necessary for the proposed construction of this project.

The Native American Heritage Commission was contacted to see if they had information in the Sacred Land File within the proposed project limits. The Commission responded that there were no known resources at the project location. The record search obtained from the North Coastal Information Center revealed that CA-Hum-240 was the nearest known archaeological site in the project vicinity, and is located outside the APE. This site consists of a lithic scatter³ and a habitation site with house pits. No surface sign of this site appears to remain. An archaeological survey and Extended Phase I Survey⁴ was performed to determine whether either site CA-Hum-240 or any other sites may extend into the project study area.

The Extended Phase I excavation occurred in areas of the APE where it was determined there was the highest probability of locating subsurface cultural resources. The Extended Phase I excavation included a total of 20-30 shovel probes, each of which measured approximately 1.6 by 3.3 feet and up to a depth of 2 feet. The excavation revealed one new archaeological site, P-12 001824, within the APE. This site proved to be a shallow, dispersed lithic scatter that appears to date to 3,500 – 1,500 Before Present. This site was found to extend beyond the APE and the Extended Phase I investigation only looked at the portion of the site that had the potential to be directly impacted by the proposed project. The portion of P-12 001824 that is located within the area to be disturbed by the proposed project was determined ineligible for the National Register of Historic Places and the California Register of Historical Resources. The California Office of Historic Preservation has concurred with this determination.

Structures within the APE were considered for their potential to be historically significant. The only bridge on Route 101 in the project area (Richardson Grove Undercrossing, Bridge No. 04-0055) was found to have been determined ineligible for listing in the National Register of Historic Places previously based on the Statewide Historic Bridge Inventory Update of 2003-2006. There are structures adjacent to the highway both within and outside of the park. The park facilities include a mixture of altered historic buildings and buildings constructed within the last fifty years and buildings outside the park are either clearly less than fifty years old or are more than fifty years old, but have been extensively altered. These buildings near the highway along the length of the project area can be excluded from the APE since the proposed work would not affect them or they have been substantially altered from their original appearance and are not eligible for listing in the National Register of Historic Places. Thus, no structures require further evaluation.

The present highway does not have the same characteristics as the original highway. The original plans for the highway are dated 1914 and show the highway built to a width of 18 feet.

³ stone tools and chipped stone debris

⁴ limited subsurface survey using shovel probes

The most recent plans, dated 1996, show a pavement width of 21 to 36 feet, in addition to shoulders in some areas of up to five feet. Although the roadway is narrower than adjacent segments of Route 101 to the north and south, it has the appearance of a modern state highway. Thus, the highway itself does not have historic qualities that would warrant its evaluation as a potential historic road.

The state park buildings are a mixture of older and more recent buildings that do not appear to constitute a historic district or historic landscape. What distinguishes this segment of Route 101 from other highways is the way in which the roadway is threaded through the redwood forest, with trees very close to the edge of the pavement. The distinctive aesthetic experience of driving along this segment of Route 101 is important to the area residents and travelers, however, it is an issue of aesthetic values of a modern highway through a natural landscape rather than one of historic preservation.

Environmental Consequences

No sites listed on, or eligible for listing in the National Register of Historic Places or the California Register of Historical Resources would be affected by the proposed project. The California Office of Historic Preservation has concurred with this determination (see Appendix F). The portion of P-12 001824 lying immediately beyond the area to be affected by construction was not evaluated and thus, could be determined eligible for listing at a future date.

Impacts to the ineligible portion of site P-12 001824 within the project limits would be as a result of vegetation removal and forest floor duff removal. These activities are required to place fill material at this location to support the road realignment. The Intertribal Sinkyone Wilderness Council considers all native archaeological sites associated with Sinkyone culture important and worthy of protection. As a result of consultation efforts with the Council, several protection measures will be incorporated into the construction work.

In addition to the California Office of Historic Preservation and the Native American Heritage Commission, consultation with the following Native American groups occurred: Intertribal Sinkyone Wilderness Council, Bear River Band of Rohnerville Rancheria, Round Valley Indian Tribes, Eel River Nation of Sovereign Wailaki, Table Bluff Wiyot Tribe, Coyote Valley Rancheria, Scotts Valley Band of Pomo Indians, Sherwood Valley Rancheria, Cahto Tribe of Laytonville Rancheria, Robinson Rancheria, Guideville Rancheria, Pinoleville Rancheria, and the Potter Valley Tribe. No opposition to the proposed project was identified during coordination.

Additional consultation regarding potential impacts to cultural resources within Richardson Grove State Park occurred with Greg Collins, State Park archaeologist, Roger Goddard, State Park Landscape Architect, and Jan Wooley, State Park architectural historian.

The proposed project will not use a Section 4(f) historic property resource. For impacts to Section 4(f) resources, refer to Appendix B.

The No Build Alternative would result in no impacts to the ineligible portion of site P-12 001824.

Avoidance, Minimization, and/or Mitigation Measures

The portion of P-12 001824 that is located outside of the area to be disturbed during construction shall be considered eligible for the National Register under Criterion D for the purposes of this project without conducting subsurface testing. An Environmentally Sensitive Area (ESA) will be established to protect this portion of the site from potential project impacts. Temporary plastic fencing will be installed around the ESA at least one week prior to initiating ground disturbing construction work and the Caltrans archaeologist will be present to monitor the fence installation.

During all ground disturbing activities associated with this project, a Caltrans archaeologist and Native American monitor will be present.

As a result of consultation with the Intertribal Sinkyone Wilderness Council, protection measures will be put in place to limit the construction impacts to the ineligible portion of site P-12 001824. These methods to limit the construction impacts have been agreed to by both the Executive Director and Chairperson of the Intertribal Sinkyone Wilderness Council.

- The ground surface will be raked by hand to remove the thin layer of leaves and redwood duff.
- Vegetation removal would occur by hand, cutting the few trees and brush to ground level.
- Stumps and root wads would be left in place.
- Once vegetation and surface material are removed, filter fabric will be rolled out by hand onto the cleared area and staked to the ground.
- After the filter fabric is in place, the fill material would be placed onto it from outside the site area and it would be spread out by construction machinery and compacted.
- At no time would heavy machinery come into direct contact with the native soil of the site and the site would remain intact at this location.

In addition, a Caltrans archaeologist and Native American monitor will be present during all ground disturbing activities throughout the entirety of the project.

If cultural materials are discovered during construction, all earth-moving activity within and around the immediate discovery area will be diverted until a qualified archaeologist can assess the nature and significance of the find. If human remains are discovered, State Health and Safety Code Section 7050.5 states that further disturbances and activities shall cease in any area or nearby area suspected to overlie remains, and the County Coroner contacted. Pursuant to Public Resources Code Section 5097.98, if the remains are thought to be Native American, the coroner will notify the Native American Heritage Commission (NAHC) who will then notify the Most Likely Descendent (MLD). At this time, the person who discovered the remains will contact the District Environmental Branch so that they may work with the MLD on the respectful treatment and disposition of the remains. Further provisions of PRC 5097.98 are to be followed as applicable.

2.2. PHYSICAL ENVIRONMENT

2.2.1. WATER QUALITY AND STORM WATER RUNOFF

Regulatory Setting

The primary federal law regulating water quality is the Clean Water Act (CWA). Section 401 of the Clean Water Act requires a water quality certification from the State Water Resources Control Board (SWRCB) or from a Regional Water Quality Control Board (RWQCB) when the project requires a CWA Section 404 permit. Section 404 of the CWA requires a permit from the U.S. Army Corps of Engineers to discharge dredged or fill material into waters of the United States.

Along with CWA Section 401, CWA Section 402 establishes the National Pollutant Discharge Elimination System (NPDES) permit for the discharge of any pollutant into waters of the United States. The federal Environmental Protection Agency has delegated administration of the NPDES program to the SWRCB and nine RWQCBs. The SWRCB and RWQCB also regulate other waste discharges to land within California through the issuance of waste discharge requirements under authority of the Porter-Cologne Water Quality Act.

The SWRCB has developed and issued a statewide NPDES permit to regulate storm water discharges from all Department activities on its highways and facilities. Department construction projects are regulated under the Statewide permit, and projects performed by other entities on Department right-of-way (encroachments) are regulated by the SWRCB's Statewide General Construction Permit. All construction projects over 1 acre require a Storm Water

Pollution Prevention Plan (SWPPP) to be prepared and implemented during construction. Department activities less than 1 acre require a Water Pollution Control Program.

Affected Environment

The North Coast Regional Water Quality Control Board (RWQCB) has adopted a Basin Plan for the North Coast Region. The Basin Plan defines beneficial uses of receiving waters, sets forth water quality objectives to protect and enhance these beneficial uses, and formulates water management programs to control discharges to these receiving water bodies.

RWQCB designated the following beneficial uses in the Basin Plan for the South Fork of the Eel River. Existing uses include: municipal and domestic supply; agricultural supply; industrial service supply; ground water recharge; freshwater replenishment; navigation; water contact recreation; non-contact recreation; commercial and sport fishing; warm and cold freshwater habitat; wildlife habitat; rare, threatened, and endangered species; migration of aquatic organisms; and spawning, reproduction, and/or early development. Potential uses identified in the Basin Plan include industrial process supply and hydropower generation.

The South Fork of the Eel River is noted as having impaired water quality for sediment and temperature and is listed on the U.S. Environmental Protection Agency's (EPA) Section 303(d) List of Water Quality Impaired Segments. Waters on the 303(d) list do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology.

A technical Total Maximum Daily Load (TMDL) for temperature and sediment was promulgated by the EPA for the South Fork of the Eel River in December 1999. Upon completion of the technical TMDL, the State is charged with ensuring the TMDL and associated load allocations. There are several mechanisms available to implement the actions necessary to meet a TMDL. These mechanisms include:

- Regulatory action(s) of the Regional Water Board, such as a permit, waiver, or enforcement order.
- Regulatory action(s) of another state, federal, or local agency. A Memorandum of Understanding may be appropriate to describe the specific regulatory actions to be taken.
- Non-regulatory action(s) such as third party agreements and self-determined pollutant control.
- Amendments of the Water Quality Control Plan for the North Coast Region (the Basin Plan), in the form of an Action Plan, which describes the steps that are necessary to meet the TMDL.

Existing highway drainage patterns within the project limits may be categorized into two types. The first is sheet flow to the shoulder of the road and dispersal to the surrounding forest. The

second is collection of the roadway drainage by roadside ditches and conveyance to either a culvert under the roadway or to a defined drainage course. Approximately 58% of the existing roadway drainage is sheet flow; approximately 38% is collected in roadside ditches and the remaining four percent is collected by an asphalt concrete dike on the roadside.

Environmental Consequences

The primary potential for water quality impacts would come from two sources: soil erosion and suspended solids being delivered to the South Fork of the Eel River. There would be a low potential for non-stormwater contaminants from construction activities to enter the River. Stormwater runoff from the proposed project would drain into the South Fork of the Eel River.

The areas temporarily disturbed during construction would be vulnerable to erosion until erosion control measures are in place or vegetation provides effective ground cover to stabilize soils from erosion processes. The proposed project design will maintain as much sheet flow of highway drainage as possible to utilize the exceptional filtering properties of the forest duff layer. The proposed project would not make substantial changes to existing drainage patterns but would make a small increase in impervious surface area with additional pavement (0.3 acres).

Fueling or maintenance of construction vehicles would occur in the project area during construction, and the risk of accidental spills or releases of fuels, oils, or other potentially toxic materials would exist. An accidental release of these materials could pose a threat to water quality if discharges were to enter culverts, the South Fork of the Eel River, its tributaries, or groundwater. The magnitude of the impact from an accidental release would depend on the volume and type of material spilled.

Benefits to water quality resulting from the project are included in the proposed project. The existing perforated culverts at PM 1.18 and 1.34 will be lined with a flexible liner. Lining these culverts will eliminate headward erosion at their outlets. The existing perforated culvert at PM 1.35 and rusted culvert at PM 1.28 will be replaced. At PM 1.78, roadside water presently draining down an eroded steep slope to a drainage will be redirected into an overside 12 inch drain which will be connected to the 48 inch existing culvert. At PM 2.10, stormwater which presently flows over the side of a fill slope and is causing erosion will be collected into a new downdrain.

With the No Build Alternative, the potential for erosion would not increase over existing. However, the beneficial impacts to water quality resulting from the drainage improvements would not occur.

Avoidance, Minimization, and/or Mitigation Measures

Mitigation measures for construction impacts would focus on the control of sediment, suspended solids, and non-stormwater discharges. For stormwater quality protection, Caltrans has a Storm Water Management Plan (SWMP) which identifies Best Management Practices (BMPs) to reduce or eliminate pollutants in runoff discharging to drainage conveyances and waterways.

BMPs anticipated to be utilized during construction include, but are not limited to:

- Use of duff collected on site to cover disturbed areas
- Use of fiber rolls on slopes as interrupter devices for surface flows
- Use of check dams, gravel bag berms, earth dikes/swales or ditches to control runoff and concentrated flow in a non-erosive manner
- Use of drainage inlet protection where appropriate
- Use of sweeping and/or vacuuming to control tracking or other construction-related residue
- Use concrete washout facilities
- Staging area on the shoulder at the northerly project limits adjacent to the South Fork of the Eel River would be protected by gravel bag berm or other device so any drainage from the site is filtered

Prior to construction, Caltrans will prepare a spill contingency plan for the project that includes identification of procedures and response crews in the event of an accidental release of hazardous materials in the Stormwater Pollution Prevention Plan.

2.2.2. GEOLOGY / SOILS / SEISMIC / TOPOGRAPHY

Regulatory Setting

For geologic and topographic features, the key federal law is the Historic Sites Act of 1935, which establishes a national registry of natural landmarks and protects “outstanding examples of major geological features.” Topographic and geologic features are also protected under the California Environmental Quality Act.

This section also discusses geology, soils, and seismic concerns as they relate to public safety and project design. Earthquakes are prime considerations in the design and retrofit of structures. The Department’s Office of Earthquake Engineering is responsible for assessing the seismic hazard for Department projects. The current policy is to use the anticipated Maximum Credible Earthquake (MCE), from young faults in and near California. The MCE is defined as the largest earthquake that can be expected to occur on a fault over a particular period of time.

Affected Environment

The terrain in the project area is mountainous area of the northern California Coast Range consisting of mountains with rounded ridges, steep and moderately steep sides, and narrow canyons. Fluvial erosion and mass wasting are the primary geomorphic processes. The elevation of the project area is about 500 feet above sea level.

The soils have a high content of organic material in the upper layer with marine sediments below. The soils are leached free of carbonates, and some older soils are strongly acid. Soil moisture regimes in the project area are predominantly xeric (dry) or at least dry during the summer months. The surface deposits underlying the project site consist primarily of silty, sandy gravel with cobbles and boulders.

The existing cut slopes within the project limits are generally only a few feet high with slopes of approximately 55°. The existing fill slopes within the project limits are generally approximately 43°.

In support of the design for the proposed retaining wall structure, a subsurface geotechnical investigation was performed in December 2007 through February 2008. Results are summarized in the Foundation Report (Caltrans, 2008). Borings to a depth of 75 feet below ground surface and two seismic refraction lines were performed to identify any anticipated stability issues.

Based on geologic mapping and the geotechnical borings, the area at the northern end of the project is underlain by colluvium primarily composed of clayey sands and gravel. Rock, consisting of slightly to very intensely fractured sandstone was also encountered in some of the borings and is interpreted to represent boulders within the colluvium. Bedrock in the area is mapped as silty shale, siltstone, sandstone, and mudstone of the Tertiary-Cretaceous Yager Formation. Based on field mapping and aerial photo interpretation, numerous debris slides have occurred at the very northerly limits of the project area, but no evidence of landslide activity was observed within the limits of the proposed wall. No other potential geologic hazards were identified.

Environmental Consequences

The proposed cut slopes would be designed at 1:1 slope ratio with the proposed cut slopes reaching a maximum height of approximately 25 feet. The proposed project would not result in increased susceptibility to erosion and geologic hazards such as earthquakes and liquefaction. The project would not impact any known natural landmark or sensitive landform.

The No Build Alternative would not impact the existing soils or geology of the area.

Avoidance, Minimization and/or Mitigation Measures

A retaining wall will be constructed at the northern most cut to decrease the height of the cut that is needed. By constructing a retaining wall, the existing vegetation at the upper portion of the slope would be allowed to remain.

For a listing of the proposed Best Management Practices related to erosion control, see the Water Quality Section above.

2.2.3. HAZARDOUS WASTE/MATERIALS

Regulatory Setting

Hazardous materials and hazardous wastes are regulated by many state and federal laws. These include not only specific statutes governing hazardous waste, but also a variety of laws regulating air and water quality, human health and land use.

The primary federal laws regulating hazardous wastes/materials are the Resource Conservation and Recovery Act of 1976 (RCRA) and the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA). The purpose of CERCLA, often referred to as Superfund, is to clean up contaminated sites so that public health and welfare are not compromised. RCRA provides for “cradle to grave” regulation of hazardous wastes. Other federal laws include:

- Community Environmental Response Facilitation Act (CERFA) of 1992
- Clean Water Act
- Clean Air Act
- Safe Drinking Water Act
- Occupational Safety and Health Act (OSHA)
- Atomic Energy Act
- Toxic Substances Control Act (TSCA)
- Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)

In addition to the acts listed above, Executive Order 12088, Federal Compliance with Pollution Control, mandates that necessary actions be taken to prevent and control environmental pollution when federal activities or federal facilities are involved.

Hazardous waste in California is regulated primarily under the authority of the federal Resource Conservation and Recovery Act of 1976, and the California Health and Safety Code. Other California laws that affect hazardous waste are specific to handling, storage, transportation, disposal, treatment, reduction, cleanup and emergency planning.

Worker health and safety and public safety are key issues when dealing with hazardous materials that may affect human health and the environment. Proper disposal of hazardous material is vital if it is disturbed during project construction.

The above regulatory criteria are based on chemical concentrations. For waste containing metals, like lead, the waste is classified as “California hazardous” when either the total metal content exceeds the respective Total Threshold Limit Concentration (TTLC) or the soluble metal content exceeds the respective Soluble Threshold Limit Concentration (STLC) based on the standard Wasted Extraction Test (WET). A material is classified as RCRA hazardous, or “federal hazardous,” when the soluble metal content exceeds the federal regulatory level based on the Toxicity Characteristic Leaching Procedure (TCLP). The TTLC value for lead is 1,000 mg/kg. The STLC and TCLP values for lead are both 5.0 milligrams per liter (mg/l).

For the purposes of this project, toxicity (i.e., lead concentrations) was the primary factor considered for waste classification since waste generated during the construction activities would not likely warrant testing for ignitability or corrosivity. Waste that is classified as either California hazardous or RCRA hazardous requires management as a hazardous waste.

The Department of Toxic Substances Control (DTSC) regulates and interprets hazardous waste laws in California. DTSC generally considers excavated or transported materials that exhibit “hazardous waste” characteristics to be a waste requiring proper management, treatment, and disposal. Soil that contains lead above hazardous waste thresholds and is left in-place would not be necessarily classified by DTSC as a “waste.” The DTSC has provided site-specific determinations that “movement of wastes within an area of contamination does not constitute “land disposal” and thus, does not trigger hazardous waste disposal requirements.”

Affected Environment

Aerially deposited lead (ADL) can be found in the surface and near surface soils alongside most major roadways resulting from motor vehicle exhaust deposits. Typically aerially deposited lead is found in shoulder areas and has a high solubility when subjected to the low PH conditions of waste characterization tests. Shoulder soils on urban and highly traveled rural highways are commonly above Soluble Threshold Limit Concentration criteria. An investigation for aerially deposited lead for the proposed project included collecting soil samples along the unpaved

shoulder and cut slope areas adjacent to Route 101 within the project limits and then analyzing the samples in a California State certified laboratory. Results are presented in the technical report, “Aerially Deposited Lead Site Investigation Report” (Geocon Consultants Inc., February 2008). Ninety three soil samples were collected from thirty three hand-auger borings on December 11, 2007. Nineteen borings were drilled from along the shoulder areas and the remainder were drilled from the proposed cut slope areas. Borings were excavated to a depth of 18 inches. Soil samples were collected at boring depths of 0 to 6 inches, 6 to 12 inches, and 12 to 18 inches. The ninety three soil samples were analyzed for total lead following the U.S. Environmental Protection Agency (EPA) Test Method 6010B. Those samples with greater than 50 mg/kg total lead (15 soil samples) were analyzed for soluble (WET) lead following the EPA Test Method 7420.

No properties listed on the Hazardous Waste and Substances Site list (a.k.a., Cortese List) per Section Section 65962.5 of the Government Code are present within the project limits.

Environmental Consequences

The Geocon investigation found that aerially deposited lead is present at the project site at levels that require bolstered dust control specifications, preparation of a health and safety plan for worker safety, and material disposal considerations. The total amount of lead found in the material was low, however, the lead that is present has a high soluble fraction typical of aerially deposited lead found along California highways.

Total lead was detected in 81 of the 93 soil samples analyzed at concentrations ranging from 5.0 to 350 mg/kg, well below the hazardous waste threshold of 1,000 mg/kg. Fifteen of the 93 soil samples had reported total lead concentrations greater than 50 mg/kg, thus requiring further testing. WET soluble lead was reported for each of the fifteen soil samples analyzed at concentrations ranging from 2.3 to 28 mg./l. Twelve of the fifteen soil samples had soluble (WET) lead concentrations greater than the STLC value for lead of 5.0 mg/l.

The results from the analysis show, that as expected, the soils in the shoulder areas adjacent to the highway have a higher concentration of lead than in the cut slope areas. The analysis also showed that the underlying soil has higher levels of total lead and soluble lead than surface soils. Excavation to a depth of 18 inches in the project area is expected. While the levels in the shoulder areas in some of the subsurface samples do exceed the threshold defined as hazardous waste (5.0 mg/l predicted WET lead), when the subsurface soils are mixed in with the top six inches the overall totals do not exceed the threshold, though they approach this threshold. Table 3 summarizes the predicted soluble lead concentrations (WET) and the waste classification for

excavated soil within roadway shoulders in the project area based on the calculated total lead upper confidence limits and the relationship between total and soluble (WET) lead.

Waste classifications as to being hazardous or non-hazardous are made based on the 90% upper confidence limits (UCL) of the lead content. This is considered to be sufficient to satisfy a good faith effort by the EPA for levels that do not meet the criteria for hazardous waste but will be disposed of outside of the state right of way. A risk assessment characterization based on the 95% upper confidence limits of the lead content is used for waste. Based on the 90 percent upper confidence limits results of less than 5.0 mg/l, soil waste generated from the Richardson Grove project site would not be classified as hazardous waste and would not require disposal as a RCRA hazardous waste.

Table 3 Lead Detection Results

Sample Population A- Shoulder Area

Sample Excavation Depth	90% UCL* Total Lead (mg/kg)	90% UCL Predicted WET Lead (mg/l)	95% UCL Total Lead (mg/kg)	95% UCL Predicted WET Lead (mg/l)	Waste Classification
0 to 6 inches	35.2	2.5	37.4	2.7	Non-hazardous
Underlying soil (6 to 18 inches)	81.1	5.8	88.1	6.3	Hazardous
0 to 12 inches	63.5	4.6	68.8	4.9	Non-hazardous
Underlying soil (12 to 18 inches)	70.4	5.1	75.9	5.5	Hazardous
0 to 18 inches	65.8	4.7	71.2	5.1	Non-hazardous

* Note: UCL is upper confidence limits

However, it is Caltrans policy to use the more conservative definition of 95% upper confidence limits for defining waste if the material is to be disposed off site as opposed to being reused onsite or disposed of within the Caltrans right of way. Thus, if the excess material generated by the project would be given to the Contractor for disposal, Caltrans would consider the material

hazardous waste and mandate that it be taken to a Class I landfill. If the material is used or disposed of onsite, it would not be considered hazardous waste.

The largest volume of excess material generated by the project are the cut slopes at the northerly portion of the project and the soils at these locations have low levels of both total and soluble lead. This material can be made property of the contractor for disposal and would not be classified as hazardous waste by internal Caltrans policy.

Fueling or maintenance of construction vehicles would occur in the project area during construction, and the risk of accidental spills or releases of fuels, oils, or other potentially toxic materials would exist. An accidental release of these materials could pose a threat to water quality if discharges were to enter culverts, the South Fork of the Eel River, its tributaries, or groundwater. The magnitude of the impact from an accidental release would depend on the volume and type of material spilled.

In addition, disturbing pavement delineation such as the yellow or white striping material by grinding or sandblasting can expose workers to lead. The repaving work that is part of the proposed project would include removal of striping and reapplying new striping.

Any soil with aurally deposited lead below hazardous waste thresholds would be disposed within the State right of way. The designated disposal site is located just south of the proposed project at PM 106.50 in Mendocino County.

The No Build Alternative would not remove any contaminated soil from the project site.

Avoidance, Minimization, and/or Mitigation Measures

The Contractor will be required to prepare a Lead Compliance Plan for worker safety due to aurally deposited lead issues as well as issues related to removing the pavement striping. This plan would include dust control specifications, health and safety plans for worker safety and material disposal considerations.

Caltrans, as part of its stormwater management plan has prepared a spill contingency plan that includes identification of procedures and response crews in the event of an accidental release of hazardous materials.

2.2.4. AIR QUALITY

Regulatory Setting

The Clean Air Act as amended in 1990 is the federal law that governs air quality. Its counterpart in California is the California Clean Air Act of 1988. These laws set standards for the quantity of pollutants that can be in the air. At the federal level, these standards are called National Ambient Air Quality Standards (NAAQS). Standards have been established for six criteria pollutants that have been linked to potential health concerns; the criteria pollutants are: carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM), lead (Pb), and sulfur dioxide (SO₂).

Under the 1990 Clean Air Act Amendments, the U.S. Department of Transportation cannot fund, authorize, or approve Federal actions to support programs or projects that are not first found to conform to State Implementation Plan for achieving the goals of the Clean Air Act requirements. Conformity with the Clean Air Act takes place on two levels—first, at the regional level and second, at the project level. The proposed project must conform at both levels to be approved.

Regional level conformity in California is concerned with how well the region is meeting the standards set for carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), and particulate matter (PM). California is in attainment for the other criteria pollutants. At the regional level, Regional Transportation Plans (RTP) are developed that include all of the transportation projects planned for a region over a period of years, usually at least 20. Based on the projects included in the RTP, an air quality model is run to determine whether or not the implementation of those projects would conform to emission budgets or other tests showing that attainment requirements of the Clean Air Act are met. If the conformity analysis is successful, the regional planning organization, such as Humboldt County Association of Governments for Humboldt County and the appropriate federal agencies, such as the Federal Highway Administration, make the determination that the RTP is in conformity with the State Implementation Plan for achieving the goals of the Clean Air Act. Otherwise, the projects in the RTP must be modified until conformity is attained. If the design and scope of the proposed transportation project are the same as described in the RTP, then the proposed project is deemed to meet regional conformity requirements for purposes of project-level analysis.

Conformity at the project-level also requires “hot spot” analysis if an area is “nonattainment” or “maintenance” for carbon monoxide (CO) and/or particulate matter. A region is a “nonattainment” area if one or more monitoring stations in the region fail to attain the relevant standard. Areas that were previously designated as nonattainment areas but have recently met the standard are called “maintenance” areas. “Hot spot” analysis is essentially the same, for

technical purposes, as CO or particulate matter analysis performed for NEPA and CEQA purposes. Conformity does include some specific standards for projects that require a hot spot analysis. In general, projects must not cause the CO standard to be violated, and in “nonattainment” areas the project must not cause any increase in the number and severity of violations. If a known CO or particulate matter violation is located in the project vicinity, the project must include measures to reduce or eliminate the existing violation(s) as well.

Affected Environment

The climate in the area is affected by a combination of the cool coastal zone and the warm Mediterranean climate common throughout most of inland California. Winters are often cool and rainy and the summers are warm and dry. The area receives an average of nearly 70 inches of rainfall annually. Mean annual temperature is about 40° to 53° F.

The project is located in an attainment/unclassified area for all current federal air quality standards. Therefore, conformity requirements do not apply.

Environmental Consequences

During construction, short-term degradation of air quality may occur due to the release of particulate emissions (airborne dust) generated by excavation, grading, hauling, and various other activities. Emissions from construction equipment also are anticipated and would include carbon monoxide (CO), nitrogen oxides (NO_x), volatile organic compounds (VOCs), directly-emitted particulate matter (PM₁₀ and PM_{2.5}), and toxic air contaminants such as diesel exhaust particulate matter. Ozone is a regional pollutant that is derived from Nox and VOCs in the presence of sunlight and heat.

Site preparation and roadway construction would involve clearing, cut-and-fill activities, grading, removing or improving existing roadways, and paving roadway surfaces. Construction-related effects on air quality from most highway projects would be greatest during the site preparation phase because most engine emissions are associated with the excavation, handling, and transport of soils to and from the site. If not properly controlled, these activities would temporarily generate PM¹⁰, PM^{2.5}, and small amounts of CO, SO₂, Nox, and VOCs. Sources of fugitive dust would include disturbed soils at the construction site and trucks carrying uncovered loads of soil. Unless properly controlled, vehicles leaving the site would deposit mud on local streets, which could be an additional source of airborne dust after it dries. PM¹⁰ emissions would vary from day to day, depending on the nature and magnitude of construction activity and local weather conditions. PM¹⁰ emissions would depend on soil moisture, silt content of the soil, wind

speed, and the amount of equipment operating. Larger dust particles would settle near the source, while fine particles would be dispersed over greater distances from the construction site.

Construction activities for large development projects are estimated by the EPA to add 1.09 tonne (1.2 tons) of fugitive dust per acre of soil disturbed per month of activity. If water or other soil stabilizers are used to control dust, the emissions can be reduced by up to 50 percent. Caltrans' Standard Specifications (Section 10) pertaining to dust minimization requirements requires use of water or dust palliative compounds and will reduce potential fugitive dust emissions during construction.

In addition to dust-related PM¹⁰ emissions, heavy trucks and construction equipment powered by gasoline and diesel engines would generate CO, SO₂, Nox, VOCs, and some soot particulate (PM¹⁰ and PM^{2.5}) in exhaust emissions. If construction activities were to increase traffic congestion in the area, CO and other emissions from traffic would increase slightly while those vehicles are delayed. These emissions would be temporary and limited to the immediate area surrounding the construction site.

SO₂ is generated by oxidation during combustion of organic sulfur compounds contained in diesel fuel. Off-road diesel fuel meeting Federal standards can contain up to 5,000 parts per million (ppm) of sulfur, whereas on-road diesel is restricted to less than 15 ppm of sulfur. However, under California law and Air Resources Board regulations, off-road diesel fuel used in California must meet the same sulfur and other standards as on-road diesel fuel, so SO₂-related issues due to diesel exhaust will be minimal. Some phases of construction, particularly asphalt paving, would result in short term odors in the immediate area of the paving sites. Such odors would be quickly dispersed below detectable thresholds as distance from the site increases.

The No Build Alternative would not result in any changes over the existing condition.

Avoidance, Minimization, and/or Mitigation Measures

Most of the construction impacts to air quality are short-term in duration and, therefore, will not result in adverse or long-term conditions. Implementation of the following measures will reduce any air quality impacts resulting from construction activities:

- The construction contractor shall comply with Caltrans' Standard Specifications Section 7-1.01F and Section 10 of Caltrans' Standard Specifications (1999).
 - Section 7, "Legal Relations and Responsibility," addresses the contractor's responsibility on many items of concern, such as: air pollution; protection of lakes, streams, reservoirs, and other water bodies; use of pesticides; safety; sanitation; and convenience of the public; and damage or

injury to any person or property as a result of any construction operation. Section 7-1.01F specifically requires compliance by the contractor with all applicable laws and regulations related to air quality, including air pollution control district and air quality management district regulations and local ordinances.

- Section 10 is directed at controlling dust. If dust palliative materials other than water are to be used, material specifications are contained in Section 18.
- Water or dust palliative will be applied to the site and equipment as frequently as necessary to control fugitive dust emissions.
- Trucks will be washed off as they leave the right of way as necessary to control fugitive dust emissions.
- Soil binder will be spread on any unpaved roads used for construction purposes, and all project construction parking areas.
- Construction equipment and vehicles shall be properly tuned and maintained. Low-sulfur fuel shall be used in all construction equipment as provided in California Code of Regulations Title 17, Section 93114.
- Contractor will develop a dust control plan documenting sprinkling, temporary paving, speed limits, and expedited revegetation of disturbed slopes as needed to minimize construction impacts to existing environment.
- Equipment and material storage sites will be located as far as away from residential and park use areas as practical. Construction areas will be kept clean and orderly.
- To the extent feasible, Environmental Sensitive Areas will be established for sensitive air receptors within which construction activities involving extended idling of diesel equipment would be prohibited. Sensitive receptors would include the highway areas in proximity to the campgrounds, residences located at the northern portion of the project and the Singing Trees Center.
- All transported loads of soils and wet materials will be covered prior to transport, or adequate freeboard (space from the top of the material to the top of the truck) will be provided to reduce PM_{10} and deposition of particulate during transportation.
- Dust and mud that are deposited on paved, public roads will be removed, or other measures employed to ensure roadways remain clear of debris such as mechanical brooms being equipped with vacuum instead of using kick brooms and pickup brooms.
- To the extent feasible, route and schedule construction traffic to reduce congestion and related air quality impacts caused by idling vehicles along local roads during peak travel times.

- Mulch will be placed and revegetation will occur as soon as practical after grading to reduce windblown particulate in the area.

Analysis of Mobile Source Air Toxics (MSAT) for Highways

This project has been determined to meet the criteria for Exempt Projects or Projects with No Meaningful Potential MSAT Effects. The types of projects included in this category are:

- Projects qualifying as a categorical exclusion under 23 CFR 771.117(c);
- Projects exempt under the Clean Air Act conformity rule under 40 CFR 93.126; or
- Other projects with no meaningful impacts on traffic volumes or vehicle mix

The purpose of this project is to remove the STAA restriction by constructing minor realignment of the existing roadway. This project will not result in any meaningful changes in traffic volumes, vehicle mix, location of the existing facility, or any other factor that would cause an increase in emissions impacts relative to the no-build alternative. As such, FHWA has determined that this project will generate minimal air quality impacts for Clean Air Act criteria pollutants and has not been linked with any special MSAT concerns. Consequently, this effort is exempt from analysis for MSATs.

Moreover, EPA regulations for vehicle engines and fuels will cause overall MSATs to decline significantly over the next 20 years. Even after accounting for a 64 percent increase in VMT, FHWA predicts MSATs will decline in the range of 57 percent to 87 percent, from 2000 to 2020, based on regulations now in effect, even with a projected 64 percent increase in VMT. This will both reduce the background level of MSATs as well as the possibility of even minor MSAT emissions from this project.

2.2.5. NOISE

Regulatory Setting

The National Environmental Policy Act (NEPA) of 1969 and the California Environmental Quality Act (CEQA) provide the broad basis for analyzing and abating highway traffic noise effects. The intent of these laws is to promote the general welfare and to foster a healthy environment. The requirements for noise analysis and consideration of noise abatement and/or mitigation, however, differ between NEPA and CEQA.

California Environmental Quality Act

CEQA requires a strictly baseline versus build analysis to assess whether a proposed project will have a noise impact. If a proposed project is determined to have a significant noise impact under CEQA, then CEQA dictates that mitigation measures must be incorporated into the

project unless such measures are not feasible. The rest of this section will focus on the NEPA-23 CFR 772 noise analysis *National Environmental Policy Act and 23 CFR 772*.

National Environmental Policy Act

For highway transportation projects with FHWA (and the Department, as assigned) involvement, the Federal-Aid Highway Act of 1970 and the associated implementing regulations (23 CFR 772) govern the analysis and abatement of traffic noise impacts. The regulations require that potential noise impacts in areas of frequent human use be identified during the planning and design of a highway project. The regulations contain noise abatement criteria (NAC) that are used to determine when a noise impact would occur. The NAC differ depending on the type of land use under analysis. For example, the NAC for residences (67 dBA) is lower than the NAC for commercial areas (72 dBA). The following table lists the noise abatement criteria for use in the NEPA-23 CFR 772 analysis.

Table 4 Noise Abatement Criteria (NAC) For Various Land Use Categories

Activity Category	NAC, Hourly A-Weighted Noise Level, dBA $L_{eq}(h)$	Description of Activities
A	57 Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose
B	67 Exterior	Picnic areas, recreation areas, playgrounds, active sport areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72 Exterior	Developed lands, properties, or activities not included in Categories A or B above
D	--	Undeveloped lands.
E	52 Interior	Residence, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums

Noise is defined as unwanted sound. Airborne sound is a rapid fluctuation of air pressure above and below atmospheric pressure. Sound levels are usually measured and expressed in decibels (db) with 0 db corresponding roughly to the threshold of hearing. Most of the sounds that we hear in the environment do not consist of a single frequency, but rather a broad band of frequencies, with each frequency differing in sound level. The intensities of each frequency add together to generate a sound. The method commonly used to quantify environmental sounds consists of evaluation all of the frequencies of a sound in accordance with a weighting that reflects the fact that human hearing is less sensitive at low frequencies and extreme high frequencies than in the mid-range frequencies. This is called, “A-weighting,” and the decibel

level so measured is called the “A-weighted sound level” (dBA). In practice, the level of a sound source is conveniently measured using a sound level meter that includes an electronic filter corresponding to the A-weighted curve. Table 5 shows typical A-weighted levels for different types of noise from common activities.

Table 5 Noise Levels of Common Activities

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
Jet Fly-over at 300m (1000 ft)	110	Rock Band
Gas Lawn Mower at 1 m (3 ft)	100	
Diesel Truck at 15 m (50 ft), at 80 km (50 mph)	90	Food Blender at 1 m (3 ft)
Noisy Urban Area, Daytime	80	Garbage Disposal at 1 m (3 ft)
Gas Lawn Mower, 30 m (100 ft)	70	Vacuum Cleaner at 3 m (10 ft)
Commercial Area		Normal Speech at 1 m (3 ft)
Heavy Traffic at 90 m (300 ft)	60	Large Business Office
Quiet Urban Daytime	50	Dishwasher Next Room
Quiet Urban Nighttime	40	Theater, Large Conference Room (Background)
Quiet Suburban Nighttime	30	Library
Quiet Rural Nighttime	20	Bedroom at Night, Concert Hall (Background)
	10	Broadcast/Recording Studio
Lowest Threshold of Human Hearing	0	Lowest Threshold of Human Hearing

In accordance with the Department’s *Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects, August 2006*, a noise impact occurs when the future noise level with the project results in a substantial increase in noise level (defined as a 12 dBA or more increase) or when the future noise level with the project approaches or exceeds the NAC. Approaching the NAC is defined as coming within 1 dBA of the NAC.

If it is determined that the project will have noise impacts, then potential abatement measures must be considered. Noise abatement measures that are determined to be reasonable and feasible at the time of final project design are incorporated into the project plans and construction contract specifications. This document discusses noise abatement measures that would likely be incorporated in the project.

The Department's *Traffic Noise Analysis Protocol* sets forth the criteria for determining when an abatement measure is reasonable and feasible. Feasibility of noise abatement is basically an engineering concern. A minimum five dBA reduction in the future noise level must be achieved for an abatement measure to be considered feasible. Other considerations include topography, access requirements, other noise sources and safety considerations. The reasonableness determination is basically a cost-benefit analysis. Factors used in determining whether a proposed noise abatement measure is reasonable include: residents acceptance, the absolute noise level, build versus existing noise, environmental impacts of abatement, public and local agencies input, newly constructed development versus development pre-dating 1978 and the cost per benefited residence.

Affected Environment

A Noise Report (Caltrans, 2007) was prepared for this project. Within the project limits, existing noise sources are predominantly highway traffic noise with some intermittent contribution from sources within Richardson Grove State Park. A sound meter was set up within the campground at Madrone Loop Site # 70. Existing typical daytime traffic noise levels, approximately 100 feet from the roadway centerline, are 64 dBA Leq while typical evening levels are 54 dBA Leq.

Land use within the project limits is primarily open space in Richardson Grove State Park. There is a park campground and portions of hiking trails located adjacent to the roadway and some housing units for park staff are located at the northerly portion of the park near Route 101. At the northernmost portion of the project limits the land use is residential with private residences located on the top of the cut west of the highway and the Singing Trees Recovery Center, a residential facility for alcohol and drug treatment abuts the highway to the east. These residences, campground, and recovery center would be sensitive receptors, and as such, would fall under Category B of the Noise Abatement Criteria listed in Table 4 above.

The project does not meet the definition of a Type 1 project as defined in 23 CFR 772. A Type 1 project is defined by Caltrans Traffic Noise Protocol as follows: "A proposed federal or federal-aid highway project for the construction of highway on a new location, or the physical alteration of an existing highway which significantly changes either the horizontal or vertical alignment, or

increases the number of through-traffic lanes.” As a result, no noise analysis or consideration of abatement for long-term operations is required under FHWA or Caltrans criteria.

Proposed noise level standards outlined in the Humboldt County Noise Ordinance Standards as contained in the current draft of the County General Plan Update are shown in Table 6.

Table 6 Humboldt County Proposed Noise Ordinance Standards

Proposed Policy: No Use Shall Create Ambient Noise Levels Exceeding Standards			
Land Use Designation	Time Period	Noise Level (dB)	
		L _{eq}	L _{max}
Residential	7am-10 pm	60	70
	10pm-7 am	55	75
Commercial and Office	7am-10 pm	65	75
	10 pm-7 am	60	70
Industrial	7am- 10 pm	70	80
	10pm – 7am	65	75

Environmental Consequences

Long-Term: Traffic noise levels are not expected to increase appreciably due to the project as the travel lanes are not moving substantially closer to any sensitive receptors.

Short-term: Construction of the project is anticipated for day as well as evening hours and would temporarily impact noise levels in the vicinity of the construction activities. Construction-related noise levels are normally highest during the demolition and earthwork phases of construction because of the heavy equipment and impact tools required to complete the work. Construction noise impacts primarily result when construction activities occur during noise-sensitive times of the day (early morning or evening hours), construction occurs in areas immediately adjoining noise sensitive land uses, or when construction durations last over extended periods of time.

The FHWA Roadway Construction Noise Model has been utilized to estimate noise levels for construction. Typical hourly average noise levels resulting from the construction of roadways are about 73 dBA to 82 dBA Leq measured at a distance of 100 feet. There would be variations

in construction noise levels on a day-to-day basis depending upon the actual activities occurring at the site. Table 7 summarizes the maximum noise levels of various pieces of heavy equipment and construction activities that could be expected during construction of the proposed project. Maximum noise levels resulting from individual pieces of equipment range from approximately 70 dBA to 84 dBA measured at a distance of 100 feet from the highway centerline. Receptors located further away from the construction would not be affected as greatly as those closer as noise levels drop off at a rate of about 6 dBA per doubling of distance between the source and receptor. Shielding by buildings or terrain can substantially reduce construction noise levels at distant receptors.

Table 7 Maximum Noise Levels from Construction Activities at 100 Feet

Equipment	Average/Max Noise Levels at 100 ft (dBA)
Front End Loader	69Leq/73Lmax
Excavator	70Leq/74Lmax
Backhoe	67Leq/71Lmax
Grader	75Leq/79Lmax
Compressor	67Leq/71Lmax
Jackhammer	75Leq/82Lmax
Concrete Saw	76Leq/84Lmax
Paver	68Leq/71Lmax
Dump Truck	66Leq/70Lmax
Ground Clearing	78Leq/78Lmax

Maximum and average noise levels generated by construction activities could temporarily exceed the noise level standards established by Humboldt County, especially in the case of construction activities occurring at night. Some campsites and trails, as well as the Singing Trees facility just outside the park would be affected the most. Only repaving and restriping work is proposed in those areas of Route 101 closest to the park campsites. In addition, some noise impacts within the park would be offset by the handwork that would be conducted around the redwood trees in the park (no heavy equipment with the exception of the paving and striping activities within the structural root zone⁵ of redwood trees).

Avoidance, Minimization, and/or Mitigation Measures

Noise generated during construction would be lowered by adhering to the provisions of Caltrans Standard Specifications, Section 7-1.01 I, “Sound Control Requirements.” This section requires

5 The structural root zone is defined as a circular area with the tree trunk at the center and a radius equal to three times the diameter of the tree trunk measured at breast height (4.5 feet above ground level). Most of a tree's structural roots would be located in this area. (Department of Parks and Recreation, 2005)

the contractor to comply with all local sound control and noise level rules, regulations, and ordinances, which apply to any work performed pursuant to the contract including requiring each internal combustion engine used for any purpose on the job or related to the job to be equipped with a muffler of a type recommended by the manufacturer. No internal combustion engine shall be operated on the project without the muffler.

The following additional noise control measures may be considered for implementation, if feasible, to reduce the effects of construction noise on sensitive noise receptors.

- Limit more severe (saw cutting, jack hammering) noise-generating activities to the hours of 7 am to 10 pm
- Require that contractors equip all internal combustion engine driven equipment with intake and exhaust mufflers that are in good condition and appropriate for equipment.
- Require contractors to limit or prohibit idling of internal combustion engines on equipment or vehicles that are not actively involved in construction activities.
- Avoid staging of construction equipment within 200 feet of sensitive areas and locate all stationary noise-generating construction equipment such as air compressors and portable power generators as far as practical from existing noise sensitive receptors.
- Initiate use of “noise curtains,” “noise tents,” or temporary barriers to screen stationary noise generating equipment and/or activities when located immediately adjacent to noise sensitive receptors.
- Encourage the contractor to utilize “quiet” air compressors and other stationary noise sources where technology exists.

Implementation of these additional noise control measures may minimize noise impacts and lower noise levels up to 8 dBA.

2.2.6. ENERGY

Regulatory Setting

The CEQA Guidelines, Appendix F, Energy Conservation, state that EIRs are required to include a discussion of the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy.

NEPA (42 USC Part 4332) requires the identification of all potentially significant impacts to the environment, including energy impacts.

Environmental Consequences

An Energy Analysis (Caltrans, 2008) was performed for this report. Removing the STAA restriction would allow for new combinations of tractor trailer rigs that are not currently allowed—one being the ability for trucking companies to use longer sleeper tractor cabs (not currently allowed) with existing trailer lengths that are currently used through the park and another being the ability to use shorter non-sleeper cabs (that are currently allowed) with longer trailers that are not currently allowed. While it is not known how many such combinations would replace the non-STAA combinations that pass through the project limits, it is not anticipated to result in a substantial change to the energy usage. In theory, the total number of truck trips could actually decrease after the project due to longer trailers having more capacity. Some diversion of truck traffic from other routes to Route 101 might occur if using Route 101 is deemed to be more economically feasible (less travel time, less distance) but the actual number unknown.

It is not anticipated that opening Route 101 at Richardson Grove to STAA trucks, by itself, will necessarily induce new business growth in the North Coast. Because of this, it is not likely that there would be substantial increase in truck trips resulting from industrial or commercial growth in the near term caused solely by the route becoming accessible to STAA vehicles. Any new growth in industrial or commercial business would likely be primarily dependent upon the overall economy of the North Coast in general.

It is anticipated that the number of trips that would decrease due to increased capacity of STAA vehicles would off-set any potential increases due to diversions of trucks to Route 101 and increased industrial or commercial growth. Thus, the net gain or loss in truck trips would be insignificant as a result of the proposed project.

Existing tractor rigs have a fuel economy of approximately 5-6 miles per gallon of diesel fuel. Even the latest high-end tractor sleeper cabs speculate being able to have only a modest (10-15%) improvement to fuel economy. It is unknown how many such modern high-end rigs would be used, but it is anticipated that average fuel economy for tractor trailer rigs would not change substantially. The proposed improvements to the roadway are not expected to result in increased or decreased prevailing speeds or travel times through the project limits. Nor would the project result in increased highway capacity as no new lanes are being constructed.

The proposed project is not anticipated to result in substantial changes to number of truck trips, the percentage of trucks on the highway, prevailing speeds, travel times, roadway capacity, fuel economy of trucks or non-truck vehicles. Thus, it is anticipated that there would be no significant change in energy conservation as a result of the project.

2.3. BIOLOGICAL ENVIRONMENT

2.3.1. NATURAL COMMUNITIES

This section of the document discusses natural communities of concern. The focus of this section is on biological communities, not individual plant or animal species. This section also includes information on wildlife corridors and habitat fragmentation. Wildlife corridors are areas of habitat used by wildlife for seasonal or daily migration. Habitat fragmentation involves the potential for dividing sensitive habitat and thereby lessening its biological value.

Habitat areas that have been designated as critical habitat under the Federal Endangered Species Act are discussed below in the Threatened and Endangered Species section. Wetlands and other waters are discussed in the next section.

Affected Environment

As stated in the Natural Environment Study, (Caltrans, November 2008), the proposed project passes through two types of vegetation communities: mature redwood forest and conifer/oak woodland. The predominant natural plant community in the project area is the Redwood Series, which occurs within Richardson Grove State Park. The overstory of the vegetation community within the project area is dominated by large redwood trees (*Sequoia sempervirens*). Also present are Douglas Fir (*Pseudotsuga menziesii* spp. *menziesii*), madrone (*Arbutus menziesii*), tan oak (*Lithocarpus densiflorus*), California bay (*Umbellularia californica*), and big leaf maple (*Acer macrophyllum*). Brush/sapling understory community includes poison oak (*Toxicodendron diversilobum*), madrone, live oak (*Quercus chrysolepis*), and tan oak. Ground vegetation consists of evergreen huckleberry (*Vaccinium ovatum*), salal (*Gaultheria shallon*), licorice fern (*Polypodium glycyrrhiza*), sword fern (*Polystichum minitum*), gold-black fern (*Pentagramma triangularis*), Indian warrior (*Delphinium nudicaule*), California fawn lily (*Erythronium californicum*), and woodland star (*Lithophragma* spp.).

Many of the larger redwood trees in the park are more than 1,000 years old and several of the trees are more than 300 feet tall. Although the California Native Plant Society Inventory does not include redwoods, it is a species that commands respect in and of themselves, in addition to providing habitat for listed species.

The conifer/oak woodland community occurs at the northerly portion of the project, primarily outside the park. This community consists of tan oak, Douglas fir, live oak, and madrone with an understory of coyote brush (*Baccharis pilularis*), scrub oak (*Quercus berberidifolia*), huckleberry, and sword fern.

Wildlife common in the vicinity include black-tailed deer, black bears, raccoons, gray foxes, Douglas squirrels, various bat species, osprey, California quail, dark-eyed juncos, various woodpecker species, and common crows.

Environmental Consequences

Most of the ground disturbance results from the excavation and fill to support the proposed realignments and occur at the following locations:

- PM 1.35 to PM 1.36- Approximately 300 cubic yards cut on western shoulder
- PM 1.37 to PM 1.39- Approximately 200 cubic yards of fill on eastern shoulder
- PM 1.56 to PM 1.61- Approximately 200 cubic yards of fill on western shoulder
- PM 1.65 to PM 1.75- Approximately 30 cubic yards cut and 40 cubic yards of fill on the eastern shoulder
- PM 2.05 to PM 2.10- Approximately 2200 cubic yards of cut on the western shoulder
- PM 2.10 to PM 2.20- Approximately 900 cubic yards of cut on the western shoulder

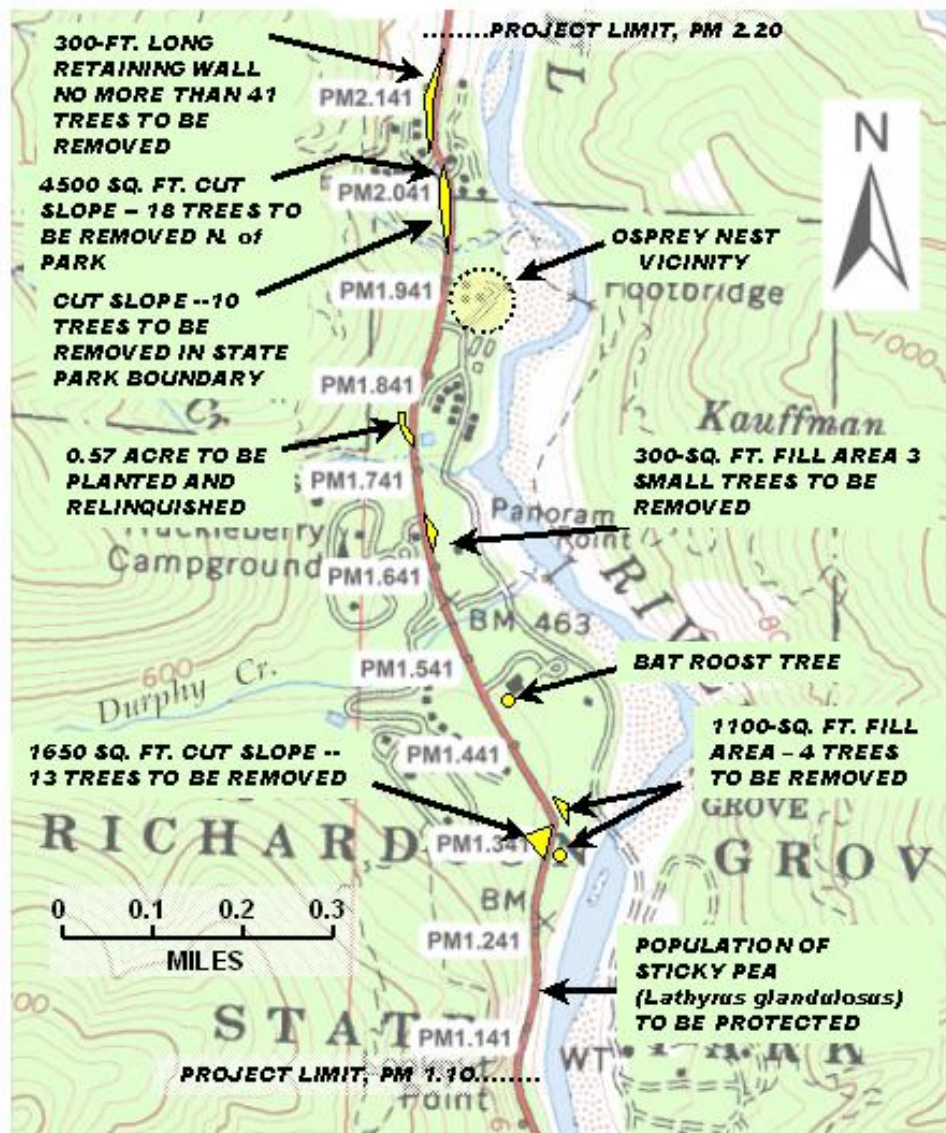
The majority of the tree removal occurs outside of the park (67%). Over half of the trees to be removed are tan oaks with the majority ranging from four to ten inches in diameter (See Table 8). About thirty percent of the trees to be removed consist of Douglas fir trees ranging from 4 inches to 24 inches in diameter. Seven redwood trees would be removed ranging from four inches to sixteen inches in diameter. The two redwood trees to be removed from the park are six inches and seven inches in diameter. Understory vegetation including smaller “seedlings” would also be removed.

Table 8 Trees That Might Be Removed Within the Project Area

Species	Size**	Total Quantity	Number in the Park
Redwood	4 – 8	5	2
Redwood	8 – 12	1	
Redwood	12 – 18	1	
Redwood	18 – 24		
Douglas Fir	4 – 8	6	
Douglas Fir	8 – 12	9	5
Douglas Fir	12 – 18	9	3
Douglas Fir	18 – 24	3	1
Big Leaf Maple	4 – 8		
Big Leaf Maple	8 – 12		
Big Leaf Maple	12 – 18	1	1
Big Leaf Maple	18 – 24	1	1
Tan Oak	4 – 8	22	7
Tan Oak	8 – 12	21	5
Tan Oak	12 – 18	3	1
Tan Oak	18 – 24	3	1
Other	4 – 8	1	1
Other	8 – 12		
Other	12 – 18	1	1
Other	18 – 24		
Total		87	29
*The estimate of tree removal at the retaining wall location represents the maximum potential tree removal; actual number is expected to be less.			
**Size, in inches at diameter breast height (the diameter of the tree trunk measured 4.5 feet above ground level)			

Construction of the retaining wall requires the greatest amount of tree removal (See Figure 9 and Appendix L). Approximately ¼ acre of tanoak-dominated woodlands would be removed. Of the 40 trees proposed for removal to construct the wall, 25 percent would be Douglas fir trees and 70 percent would be tan oaks. This would be the maximum number that would be removed. As construction of the retaining wall occurs, it may be possible to preserve additional trees. The trees to be removed are on the lower portion of the slope. The trees on the upper portion of the slope would remain. It was determined to utilize a retaining wall at this location to minimize the cut and reduce the numbers of trees to be removed. Without the retaining wall, the cut would have extended up to the top of the slope and many more trees would have been removed.

Figure 9 Location of Proposed Tree Removal



Garberville USGS 7.5 Minute Quadrangle
T5S, R3E, S 11 & 12

In addition to the tree removal itself, construction activities could result in other impacts to trees, both long term and short term. Long term impacts to the trees resulting from this project include placement of impervious material, placement of fill over the roots, changing drainage patterns, and compaction. Short term impacts from construction can affect tree roots from such activities as soil disturbance, excavation; compaction; cutting roots; and exposure to fuel and oils from leaky equipment.

Of most concern is concern is construction activity that occurs within the structural root zone of the trees for both long term and short term impacts. The structural root zone is a circular area with the tree trunk at the center with a radius equal to three times the diameter of the tree trunk measured at 4.5 feet above the ground level (Department of Parks and Recreation, 2005). There would be construction activities that occur within the structural root zone of approximately 30 redwood trees ranging in diameter from 18 inches to 15 feet. This zone is where most of the nutrient and water absorption occurs. The possibility of injury to a tree resulting from construction activities generally increases as the distance to the trunk decreases. In addition, construction activities occurring from the surface to three feet below ground level have the most potential to result in impacts to trees (Department of Parks and Recreation, 2005). Table 9 and Appendix L includes plans showing where construction occurs within the structural root zone of trees.

The proposed realignments would require placing the roadbed nearer to some trees and locating it further from other trees and removing the existing pavement. An additional 0.14 acre of roadbed material would be placed within the structural root zone area of trees within the project limits. This represents a nearly five percent increase in the total amount of hardened surface (roadbed) within the structural root zone area of trees within the project limits. This includes all species of trees.

Some trees would not have roadbed material placed within the structural root zone area, but would be located within a fill slope and have fill placed over the roots. The biggest concern is fill on the root flare of the stem. Within the project limits fill depths within the structural root zone range from a few inches to a nearly four feet but most depths average between one and two and a half feet. In locations where the fill would be placed up to the trunk of the tree, it is proposed to place a brow log against the trunk. A brow log is a log that is placed parallel to the road against the trunk of the tree to be protected and the fill is placed up against the brow log not the trunk of the tree. Placing the brow log prevents fill material being placed against the trunk which helps maintain air circulation. Trees where brow logs are being proposed are shown in Table 9.

Construction activities would likely result in additional compaction of the soils within the structural root zone of some redwoods, while realignment could result in a decrease in compaction in other areas within the project by moving the roadway further from the trees and removing the existing roadbed. Compaction typically alters soil structure and hydrology by increasing soil bulk density; breaking down soil aggregates; decreasing soil porosity, aeration and infiltration capacity; and by increasing soil strength, water runoff, and soil erosion. Absorption of the major mineral nutrients is reduced by compaction of both surface soils and subsoils. Severe compaction of the soil also affects seed germination and growth of seedlings. Many of the large redwoods within and adjacent to the project area are likely affected by compaction resulting from the existing Route 101 roadway and park facilities (campsites, trails, roads, park structures). The proposed project is not anticipated to substantially increase the magnitude of compaction that presently exists.

The proposed project design will maintain as much sheet flow of highway drainage as possible to utilize the exceptional filtering properties of the forest duff layer. The proposed project would not make substantial changes to existing drainage patterns but would make a small increase in impervious surface area (0.3 acres). This increase in impervious surface occurs as a result of the wider shoulders in the outside the park as well as some additional increase in roadbed surface with the realignments.

Table 9 Potential Tree Root Effects

	PM	R/L	Species	Size*		PM	R/L	Species	Size*
1	1.18	L	big leaf maple	17	21	1.37	R	redwood	18
2	1.18	L	other	12	22	1.44	R	redwood	94
3	1.26	L	redwood	18	23	1.47	R	redwood	43
4	1.26	L	redwood	48	24	1.47	L	redwood	84
5	1.29	L	redwood	84	25	1.47	L	redwood	84
6	1.29	R	redwood	48	26	1.48	L	redwood**	78
7	1.30	R	Douglas fir	12	27	1.48	R	redwood	156
8	1.31	R	Douglas fir	16	28	1.49	L	redwood	82
9	1.32	R	Douglas fir**	24	29	1.50	L	redwood	144
10	1.32	R	oak**	6	30	1.53	L	redwood	84
11	1.32	L	redwood	78	31	1.56	R	redwood	96
12	1.34	R	Douglas fir**	24	32	1.57	L	redwood	60
13	1.34	R	Douglas fir**	16	33	1.61	L	redwood	36
14	1.34	R	redwood	115	34	1.67	L	redwood	60
15	1.34	L	alder	13	35	1.67	R	redwood	182

16	1.36	R	redwood	86	36	1.67	L	redwood	120
17	1.36	R	redwood	90	37	2.04	L	redwood	108
18	1.37	R	alder**	19	38	2.04	R	redwood	30
19	1.37	L	redwood	42	39	2.04	R	redwood	34
20	1.37	R	redwood**	19	40	2.04	R	redwood	46

*Size, in inches at diameter breast height (the diameter of the tree measured 4.5 feet above ground level)

** Trees to be affected by placement of fill protected with brow log

Short term construction impacts can occur during the construction itself and immediately after. The disturbed areas would be vulnerable to erosion until erosion control measures are in place or vegetation provides effective ground cover to stabilize soils from erosion processes.

There are no known wildlife migration corridors within the project limits, although it is likely that wildlife cross the highway to access the South Fork of the Eel River. The existing roadway bisects Richardson Grove State Park, beyond which is open ranch land. The park itself fragments habitat, at least in those areas that provide visitor-serving uses such as the campground, roads, visitor center, restrooms, and other ancillary structures that service the campground and Park visitors.

Under the No Build Alternative, there would be no additional long term impacts to the trees abutting the highway and no impacts resulting from construction.

Avoidance, Minimization and/or Mitigation Measures

Mitigation Measures include:

M-1: Restorative planting of 0.57 acre of former Route 101 roadbed alignment. Once the planting has become established, this area will be removed from the California Department of Transportation easement and transferred back to the California Department of Parks and Recreation.

M-2: To offset the impacts to the trees where construction occurs within the structural root zone, mitigation will be provided to increase the amount of invasive plant removal. A contract with the California Conservation Corps will be established to provide 300 hours a year for four years (three days each year for a crew of twelve, the minimum crew size). Crew to be directed at the discretion of the California Department of Parks and Recreation.

The following avoidance and minimization measures will be implemented for work in the park:

- A biological monitor shall be present for any ground disturbing construction activities
- All excavation work below the finish grade within a setback equal to three times the diameter of any redwood tree shall be done by hand to minimize disturbance or damage to roots
- All excavation below the finish grade within a setback equal to three times the diameter of any redwood trees shall be done with shovels, pick axes, or other non-mechanized methods approved by the construction engineer to minimize disturbance or damage to the roots with the exception of culvert excavation at PM 1.18, 1.28, 1.34 and 1.35. Mechanized equipment can be used at these locations upon approval of the construction engineer.
- The contractor will be required to use an air spade while excavating the soil within the structural root zone of redwood trees to minimize physical injury to the tree roots.
- Smaller roots less than 2 inches in diameter that must be cut shall be cut cleanly with sharp instrument in order to promote healing.
- The structural section for new pavement shall consist of Cement Treated Permeable Base (CTPB) to minimize the thickness of the structural section, provide greater porosity, minimize compaction of roots, and minimize thermal exposure to roots from Hot Mix Asphalt paving.
- After construction, the 1 1/2:1 cut-slope area between PM 1.35 and PM 1.37 will be replanted with the same species of trees, shrubs, and ferns that were present in the area prior to construction. After tree removal, but prior to excavation of the cut-slope areas, the upper 6 to 12 inches of duff and native soil (topsoil) will be set aside for placement on finished fill slopes to provide the nutrients and a seed bank for natural revegetation.
- For areas within the Park, Caltrans will adhere to the California Department of State Parks and Recreation Commission Statement of Policy (Policy 11.4) which states, “In order to maintain the genetic integrity and diversity of native California plants, all transplant and propagation in the North Coast Redwoods District will be from the local populations (preferably from within the same stand). For the purpose of this policy, local is defined as being from the immediate project area (as close as possible, but generally less than one mile).”
- In areas where new embankment is to be constructed to protect roots and promote air circulation the following measures shall be used:
 - The existing vegetation needing removal shall be cut flush with the ground and stumps left in place.

- Any duff layer shall be hand raked off the area within the clearing limits, stored, and replaced as erosion control.
- A 0.75 foot thick layer of Class 1, Type A permeable material shall be placed and compacted as the first lift of the fill to increase water infiltration and air circulation. (In areas next to the shoulder hinge point it might not be possible to provide this much depth. In those cases, as much as feasible will be placed.) A layer of filter fabric shall then be applied prior to placing the remaining fill required for the embankment.
- In locations where fill would be placed next to the trunk of a redwood tree greater than three feet in diameter, a brow log shall be used to keep the soil from the tree trunk to increase air circulation.

Additional minimization measures utilized throughout the project limits include:

Equipment staging areas/storage areas will be on the paved roadway or on existing unvegetated gravel/paved pullouts so there will be no staging in sensitive natural communities.

Special provisions in the contract will state that no heavy equipment will be staged or parked within the drip line of mature trees in unpaved areas.

To avoid impacts to nesting migratory birds, vegetation removal will occur between September 30 and March 1. If this is not feasible, a qualified biologist will conduct a preconstruction bird survey to ensure that birds are not nesting in any of the vegetation to be removed. This survey would be conducted not more than seven days prior to the vegetation removal. If birds are nesting, the nest site will be designated an Environmentally Sensitive Area and the nest left alone until nesting is complete.

With the exception of a few trees being used as brow logs to protect the trees from fill, trees and shrubs cleared from the project area will be put into a chipper and the chips distributed onto the finished slopes as mulch where feasible. All areas of disturbed soil will be further stabilized with weed-free mulch after planting if needed.

The majority of disturbed area will be replanted in kind (see Appendix J).

A 300-foot retaining wall is proposed at the northern most cut. Without the retaining wall, the cut would continue up the slope and all the trees on the slope would be removed. By constructing the retaining wall approximately 33 trees would be preserved.

See sections under Wetlands and other Waters, Plant and Animal Species, and Threatened and Endangered Species following below.

2.3.2. WETLANDS AND OTHER WATERS

Regulatory Setting

Wetlands and other waters are protected under a number of laws and regulations. At the federal level, the Clean Water Act (33 U.S.C. 1344) is the primary law regulating wetlands and waters. The Clean Water Act regulates the discharge of dredged or fill material into waters of the United States, including wetlands. Waters of the United States include navigable waters, interstate waters, territorial seas and other waters that may be used in interstate or foreign commerce. To classify wetlands for the purposes of the Clean Water Act, a three-parameter approach is used that includes the presence of hydrophytic (water-loving) vegetation, wetland hydrology, and hydric soils (soils subject to saturation/ inundation). All three parameters must be present, under normal circumstances, for an area to be designated as a jurisdictional wetland under the Clean Water Act.

Section 404 of the Clean Water Act establishes a regulatory program that provides that no discharge of dredged or fill material can be permitted if a practicable alternative exists that is less damaging to the aquatic environment or if the nation's waters would be significantly degraded. The Section 404 permit program is run by the U.S. Army Corps of Engineers with oversight by the U.S. Environmental Protection Agency (EPA).

At the state level, wetlands and waters are regulated primarily by the Department of Fish and Game (DFG) and the Regional Water Quality Control Boards (RWQCB). In certain circumstances, the Coastal Commission (or Bay Conservation and Development Commission) may also be involved. Sections 1600-1607 of the Fish and Game Code require any agency that proposes a project that will substantially divert or obstruct the natural flow of or substantially change the bed or bank of a river, stream, or lake to notify DFG before beginning construction. If DFG determines that the project may substantially and adversely affect fish or wildlife resources, a Lake or Streambed Alteration Agreement will be required. DFG jurisdictional limits are usually defined by the tops of the stream or lake banks, or the outer edge of riparian vegetation, whichever is wider. Wetlands under jurisdiction of the ACOE may or may not be included in the area covered by a Streambed Alteration Agreement obtained from the DFG.

The Regional Water Quality Control Boards were established under the Porter-Cologne Water Quality Control Act to oversee water quality. The RWQCB also issues water quality certifications in compliance with Section 401 of the Clean Water Act. Please see the Water Quality section for additional details.

Affected Environment

Information for this section is derived from the Natural Environment Study (Caltrans, 2008). The South Fork of the Eel River flows parallel to Highway 101 within the project limits. This 105 mile River flows from its headwaters at Cahto Peak near Laytonville in Mendocino County to the confluence with the mainstem of the Eel River near Weott in Humboldt County. The South Fork Eel River Basin drains about 689 square miles. Additionally, three named watercourses cross under Route 101 within the project limits: Durphy Creek, North Creek, and Laurel Creek. Durphy Creek is a perennial stream supporting Coho Salmon (a state and federally listed species), Chinook Salmon (a federally listed species), and Northern California Steelhead trout (a federally listed species) draining a watershed of about 2.15 square miles. The creek flows about two and half miles from its headwaters northwest of Richardson Grove to its confluence with the South Fork Eel, flowing through a 5 feet high by 10 feet wide concrete box culvert under Route 101 at PM 1.62. North Creek is a seasonal stream about three quarters of a mile in length which drains about 115 acres. This seasonal stream supports Foothill Yellow-legged Frog (*Rana boylei*), a State Species of Concern and crosses under Route 101 in a culvert at PM 1.78. Laurel Creek is also a seasonal stream about 3,470 feet in length which drains a watershed of about 127 acres. This creek crosses under Route 101 via a culvert at PM 1.98.

Six other culverts within the project limits at PM 1.18, 1.28, 1.34, 1.35, 1.78, and 2.10 are proposed for improvements (See Figure 10). All but the last two locations are 18-inch culverts. The culvert at PM 1.78 is a 48-inch culvert and the culvert at PM 2.10 is 24 inches. These culverts convey water from existing channels under the highway. None of these channels are fish-bearing, neither do they contain special aquatic sites (pools, riffles) within the project limits.

Environmental Consequences

No work is proposed in the South Fork of the Eel River, nor in the three named streams found within the project limits. No work in wetlands is proposed for the project. There are no fish passage issues with the proposed culvert work.

The project would result in minor temporary impacts and minimal permanent impacts to Waters of the U.S. due to the culvert improvements. Work at the six culvert locations includes lengthening the culverts, installing liners in the culverts located PM 1.18 and 1.34 in the Park, replacing the culverts at PM 1.28, 1.34, and 2.10 with 24-inch culverts, and extending an existing berm to direct water into downdrain which will connect to the existing 48-inch culvert at PM 1.78. Work would also include constructing new inlet headwalls at each of the locations with the exception of PM 1.78, and extending the cross drains. The existing headwalls would be demolished and removed and then rebuilt back away from the roadway edge by three to five feet

depending upon the location. Construction of the headwalls would require disturbing the soils to a depth of three to five feet and reshaping the drainage channel entrances. The extension of the inlets would involve adding additional pipe to the culvert pipe already in place. The liners for the 18-inch culverts would be flexible plastic cast-in-place pipe liners of thermosetting resin. The liner is placed in the pipe and filled with hot air to expand the liner to conform to the interior of the pipe and activates the resin to set up. At PM 2.10, a conduit will also be installed as part of the culvert replacement to provide a separate accommodation for a private water line. A new downdrain and rock slope protection (RSP) dissipater would be located to intercept the roadway drainage currently flowing over the fill slope.

The proposed improvements would require temporary soil and vegetation disturbance in a 20 feet x 20 feet (400 square feet) area at both the inlet and outlet at each of the five culverts (construction of the downdrain would not require this disturbance). No tree removal would be required. Additional fill would be added to the uplands adjacent to the roadway shoulders perpendicular to the culverts.

It is expected that minor amounts of sediment discharge due to these culvert improvements are unavoidable. To maintain water quality and to minimize the movement of soils and sediment both into and within the project watercourses, effective erosion and pollution control measures will be developed and implemented. Installation of applicable Best Management Practices (BMPs) to stabilize all bare soil areas over both the short-term and long-term, minimize adverse effects to water quality, aquatic habitat, and listed fishes, and would ensure that impacts from erosion would be minimal.

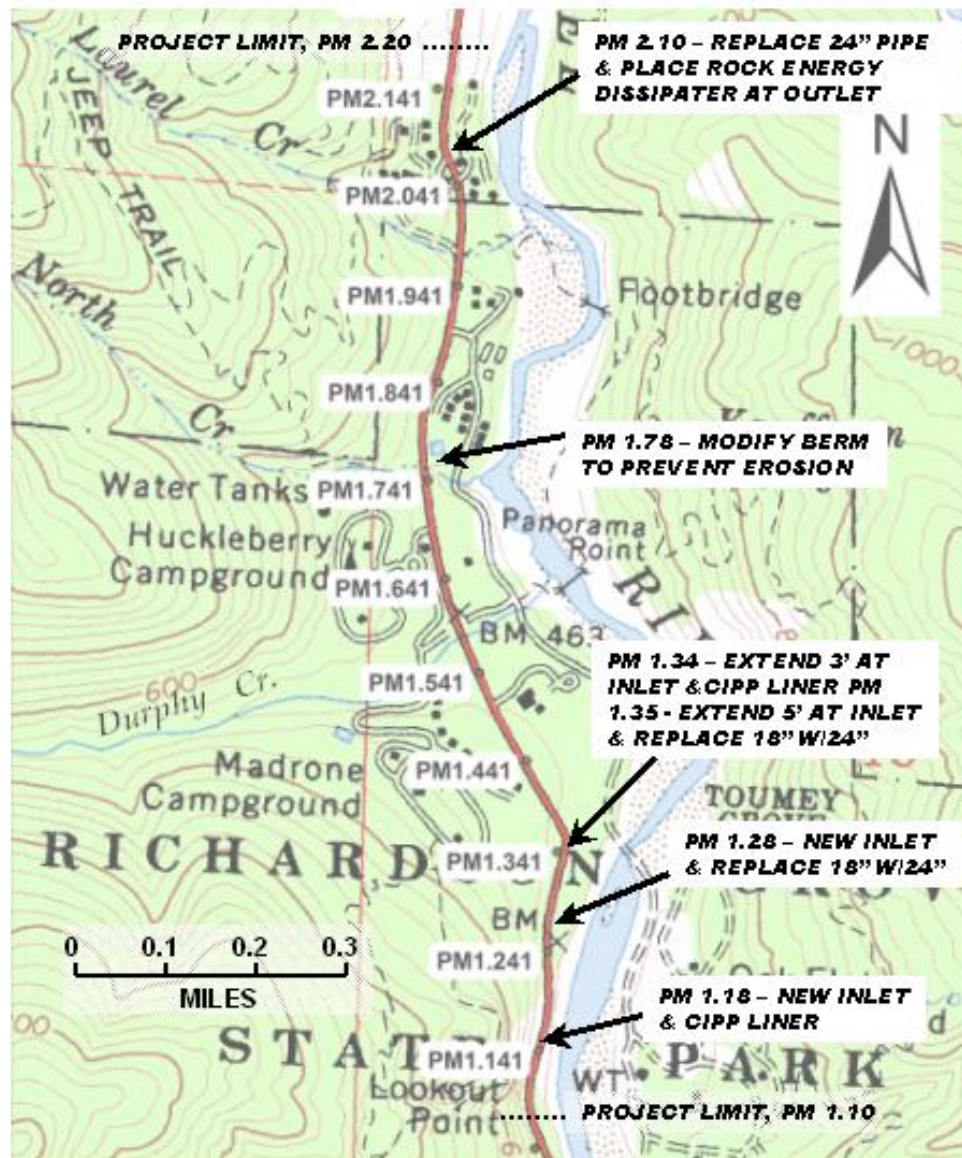
The primary construction staging areas will in the pull-outs to the immediate north and south of the project area along Route 101, however, the contractor may arrange additional staging areas on private property nearby. The pullout to the north of the project area on Route 101 is adjacent to the South Fork of the Eel River.

Permanent impacts would result from lengthening the culverts from 3 to 5 feet and are expected to be minimal. There would be a beneficial impact resulting from the improvements at PM 1.78 which would improve water quality by reducing the erosion that was occurring. Temporary impacts would occur during the installation of the liners, replacement of the culverts, and construction of the headwalls.

Permits for the proposed culvert improvement work would be required from the U.S. Army Corps of Engineers, California Department of Fish and Game, and the Regional Water Quality Control Board. An on-site meeting was held June 30, 2008 with staff from California

Department of Fish and Game, Regional Water Quality Control Board, and Army Corps of Engineers to discuss the project.

Figure 10 Culvert Improvements



Garberville USGS 7.5 Minute Quadrangle
T5S, R3E, S 11 & 12

Avoidance, Minimization and/or Mitigation Measures

All work in drainages will take place between June 1 and October 15 to avoid sediment discharge and to control erosion.

Any debris and sediment will be contained within the work site.

Excess material excavated from the work site will be disposed of off-site at an approved disposal site away from any stream course or reused as fill onsite.

For all areas disturbed by construction, Caltrans will monitor all revegetation efforts up to four years or until 80 percent success rate is achieved.

At the end of each work shift, any vehicles stored within 150 feet of the Ordinary High Water Mark of any drainage facilities and watercourses will have containment placed beneath the drip zone when left overnight. Any leaks will be immediately controlled with absorbent mats and repaired before the equipment operates again. Clean up of petro-chemical drips will occur as soon as they are observed. All equipment shall be monitored daily for chemical leakage. To offer protection from storm events, Caltrans shall require monitoring for storm events and moving equipment accordingly.

Silt fences and fiber rolls will be placed to control sediment discharge, thereby minimizing sediment that could be released into receiving waters.

Silt fences and fiber rolls will be applied to exposed soil areas for over-wintering protection from erosion.

No concrete washing or water from concrete will be allowed to flow into waterways and no concrete will be poured within flowing water in the waterways. Water that has come into contact with setting concrete will be pumped into a tank and disposed of at an approved disposal site.

The contractor will be required to develop and implement a Water Pollution Control Plan or Stormwater Pollution Prevention Plan identifying site-specific best management practices and emergency spill controls.

2.3.3. PLANT AND ANIMAL SPECIES

Regulatory Setting

Many state and federal laws regulate impacts to plants and wildlife. The U.S. Fish and Wildlife Service (USFWS), the National Oceanic and Atmospheric Administration (NOAA) Fisheries and the California Department of Fish and Game (DFG) are responsible for implementing these laws. USFWS and DFG also share regulatory responsibility for the protection of special-status plant species. “Special-status” species are selected for protection because they are rare and/or subject to population and habitat declines. Special status is a general term for species that are afforded varying levels of regulatory protection. The highest level of protection is given to threatened and endangered species; these species that are formally listed or proposed for listing as endangered or threatened under the Federal Endangered Species Act (FESA) and/or the California Endangered Species Act (CESA). Please see the Threatened and Endangered Species Section below in this document for detailed information regarding these species.

This section discusses all the other special-status plant and wildlife species, including DFG fully protected species and species of special concern, USFWS candidate species, and the non-listed California Native Plant Society (CNPS) rare and endangered plants.

The regulatory requirements for FESA can be found at United States Code 16 (USC), Section 1531, et seq. See also 50 CFR Part 402. The regulatory requirements for CESA can be found at California Fish and Game Code, Section 2050, et seq. Department projects are also subject to the Native Plant Protection Act, found at Fish and Game Code, Section 1900-1913, and the California Environmental Quality Act, Public Resources Code, Sections 2100-21177.

Additional Federal laws and regulations pertaining to wildlife include the following:

- National Environmental Policy Act
- Migratory Bird Treaty Act
- Fish and Wildlife Coordination Act

State laws and regulations pertaining to wildlife include the following:

- California Environmental Quality Act
- Sections 1600 – 1603 of the Fish and Game Code
- Sections 4150 and 4152 of the Fish and Game Code

Affected Environment

Information for this section was derived from the Natural Environment Study (Caltrans, 2008). The California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants Database 9-Quad search was also used to determine the presence of rare plants that might be in the project area. Floristic surveys were conducted in April and July 2007. (Appendix G)

Although the CNPS Inventory lists a number of rare plants in the 9-Quad area which includes the project area, the floristic surveys conducted on July 26, 2007 only found one rare plant population in the project limits, the Sticky pea (*Lathyrus glandulosus*) (See Figure 9). This population of Sticky pea is CNPS List Ranked 4.3 (limited distribution in California, watch list; not very endangered in CA); State Rank S3.3 (21-80 occurrences or 3,000-10,000 individuals, or 10,000-50,000 acres); Global Rank G3 (same definition as the State Rank). The Sticky pea is only known to occur in Humboldt and Mendocino Counties and is endemic to California (not found outside of CA). The occurrence within the project limits is in the middle of the species' range.

A query of the California Natural Diversity Database (CNDDDB) was conducted for the project area and several special status species were reported to have occurred near the project area. Of the numerous species listed in the CNDDDB in the 9-Quad Area, suitable habitat is present in the project limits for the following species: Northern Spotted Owl (*Strix occidentalis caurina*), Pacific Fisher (*Martes pennanti pacifica*), Marbled Murrelet (*Brachyramphus marmoratus*), Bald Eagle (*Haliaeetus leucocephalus*), Osprey (*Pandion haliaetus*), Pallid Bat (*Androzous pallidus*), Foothill Yellow-legged frog (*Rana boylei*), Southern Torrent Salamander (*Rhyacotriton variegatus*), Western Pond Turtle (*Actinemys marmorata*), Coho Salmon (*Oncorhynchus kisutch*), Chinook Salmon (*Oncorhynchus tshawytscha*), and Northern California Steelhead (*Oncorhynchus mykiss*).

The Northern Spotted Owl, Marbled Murrelet, Bald Eagle, Pacific Fisher, Coho Salmon, Chinook Salmon, and Northern California Steelhead are discussed in the listed threatened and endangered species section of the document.

Osprey:

The Osprey is a California Department of Fish and Game Species of Concern. This bird nests within 15 miles of oceans, bays, fresh-water lakes, and larger streams and rivers where plentiful fish can be found. The large trees in Richardson Grove may provide some elements of suitable habitat. There is a nest located in a tree off the highway that has been occupied during the past several years located near PM 1.94. (See Figure 9)

Yuma Myotis Bat:

The Yuma Myotis Bat is common and widespread in California and is found in a variety of habitats. In Richardson Grove, there is a hollow redwood tree about 25 feet from the edge of the roadway near PM 1.49 which provides a maternity roost for a colony of Yuma Myotis bats. The female bats give birth from May to July and the pups are dependent upon the female for a six week period. (See Figure 9)

Pallid Bat:

The Pallid Bat is a California Department of Fish and Game Species of Concern. This species can be found in deserts, grasslands, shrublands, and forests. They are most common in open, dry habitats with rocky areas for roosting. There is a historical record of an individual bat collected in Richardson Grove in 1936.

Foothill Yellow-legged Frog:

The Foothill Yellow-legged Frog is a California Department of Fish and Game Species of Concern. This species can be found in partly shaded, shallow streams and riffles with a rocky substrate in a variety of habitats. These frogs require cobble-sized substrate for egg-laying. The CNDDDB shows a 2005 observation of this species in North Creek just west of Route 101.

Southern Torrent Salamander:

The Southern Torrent Salamander is a California Department of Fish and Game Species of Concern. It can be found in coastal redwood, Douglas-fir, mixed conifer, montane riparian, and montane hardwood –conifer habitats in cold, well-shaded, permanent streams and seepages. Suitable habitat is present in the drainages upstream and downstream of the four 18-inch culverts located at PM 1.18, 1.28, 1.34 and 1.35 within the project limits (See Figure 10). The outlet of the culvert at PM 1.18 is perched on a steep slope and would allow salamanders, if present, to move downstream only. The culvert at PM 1.34 is also perched about one foot above the slope making it difficult for any salamanders present to move upstream. The culverts at PM 1.28 and PM 1.35 outlet at grade and thus are not a barrier to salamander mobility.

Western Pond Turtle:

The Western Pond Turtle is a California Department of Fish and Game Species of Concern. It can be found in permanent or semi-permanent freshwater aquatic habitats. It has been found in the South Fork of the Eel River and its tributaries in the vicinity of Richardson Grove State Park.

During spring or early summer, female pond turtles lay eggs in depressions they dig in stream banks or within 300 feet of a stream.

Environmental Consequences

No work is proposed in the South Fork of the Eel River, nor in the three named streams found within the project limits. No work in wetlands is proposed for the project. Fish are not present in any of the drainages proposed for culvert improvements. There are no fish passage issues with the proposed culvert work.

The sticky pea population would not be impacted by the proposed project as the area surrounding the population will be designated in the project plans and on the ground as an Environmentally Sensitive Area (ESA). This Environmentally Sensitive Area will be fenced as a first order of work.

The maternity roost of Yuma Myotis Bats could possibly be impacted by construction activities. If overly disturbed, females could abandon the roost. For night work construction, no portable lights will be used within 100 feet of the roost tree during the period that dependent pups are likely to be present (May through August). Lights on equipment will not substantially exceed the level of disturbance of the existing traffic headlights. Construction activities will take place within 100 feet of the roost tree for no more than 2-3 hours at a time for a period of three to four days. Therefore, this project is not likely to adversely impact these bats or their habitat.

Although the large trees with Richardson Grove may provide some elements of suitable habitat for Osprey and Pallid Bats, these trees would not be substantially impacted by the proposed project. The noise and activity disturbance generated by construction is not expected to substantially exceed existing disturbance levels from the highway and campground. For night work construction, lighting will be directed downward toward the roadway and will not substantially exceed the level of disturbance from existing traffic. Thus, the proposed project would not adversely impact Osprey, Pallid Bats, or their habitat.

Foothill Yellow-legged Frogs have been observed in North Creek. This creek is within the project limits, but no work in the bed, bank, or channel of this stream is proposed. The drainage improvement being proposed at this location is to extend the existing berm to divert water to a new twelve inch downdrain which will connect to the existing 48-inch culvert. This work would not adversely affect the Frog. Work is being proposed for five culverts within the project limits. The upstream and downstream areas of these drainages may have suitable habitat for the frog. The disturbance at these areas will be less than 500 square feet at each culvert and the inlets will be returned to their original contours. There would be minimum permanent habitat disturbance.

Any impacts to the Yellow-legged Frogs would be minor and temporary. The proposed project would not result in substantial adverse impacts to the Foothill Yellow-legged Frog or its habitat.

Suitable habitat for the Southern Torrent Salamander may be present in the areas near the inlets and outlets of the four 18-inch diameter culverts proposed for improvements. The culverts at PM 1.18 and PM 1.34 are having liners installed, thus, the perched culvert outlets which are barriers to salamander mobility would not change. The culverts at PM 1.18 and PM 1.28 will be replaced and will outlet at grade as they currently do so these culverts would continue to present no barrier to salamander mobility. The disturbance at each culvert inlet and outlet area would be less than 500 square feet and the areas would be returned to their original contours. There would be minimum permanent habitat disturbance. Any impacts to the salamander would be minor and temporary. The proposed project would not adversely impact the Southern Torrent Salamander or its habitat.

All of the culvert work proposed for the project involves small, seasonal drainages which is unsuitable habitat for the Western Pond Turtle. However, work at the culverts located at PM 1.28 and 1.35 includes some excavation on the river side of Route 101 within 300 feet of the South Fork of the Eel River. Female pond turtles could build nests in this area. While there will be some work in performed in suitable habitat, there will be minimal work involving heavy equipment. Any trenching for the culvert replacements would be done from the paved roadway. Any impact to the Western Pond Turtle would be minor and temporary. The proposed project would not result in adverse impacts to the Western Pond Turtle or their habitat.

Avoidance, Minimization, and/or Mitigation Measures

ESA fencing will be installed during construction to protect the Sticky pea population from potential construction impacts.

For night work construction, no portable lights will be used within 100 feet of the roost tree during the period that dependent young bat pups are likely to be present (May through August).

Construction activities will take place within 100 feet of the roost tree for no more than 2-3 hours at a time for a period of three to four days.

For night work construction, lighting will be directed downward toward the roadway and will not substantially exceed the level of disturbance from existing traffic.

2.3.4. THREATENED AND ENDANGERED SPECIES

Regulatory Setting

The primary federal law protecting threatened and endangered species is the Federal Endangered Species Act (FESA): 16 United States Code (USC), Section 1531, et seq. See also 50 CFR Part 402. This act and subsequent amendments provide for the conservation of endangered and threatened species and the ecosystems upon which they depend. Under Section 7 of this act, federal agencies, such as the Federal Highway Administration, are required to consult with the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NOAA Fisheries) to ensure that they are not undertaking, funding, permitting or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. Critical habitat is defined as geographic locations critical to the existence of a threatened or endangered species. The outcome of consultation under Section 7 is a Biological Opinion or an incidental take permit. Section 3 of FESA defines take as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or any attempt at such conduct.”

California has enacted a similar law at the state level, the California Endangered Species Act (CESA), California Fish and Game Code, Section 2050, et seq. CESA emphasizes early consultation to avoid potential impacts to rare, endangered, and threatened species and to develop appropriate planning to offset project caused losses of listed species populations and their essential habitats. The California Department of Fish and Game (DFG) is the agency responsible for implementing CESA. Section 2081 of the Fish and Game Code prohibits "take" of any species determined to be an endangered species or a threatened species. Take is defined in Section 86 of the Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." CESA allows for take incidental to otherwise lawful development projects; for these actions an incidental take permit is issued by DFG. For projects requiring a Biological Opinion under Section 7 of the FESA, DFG may also authorize impacts to CESA species by issuing a Consistency Determination under Section 2080.1 of the Fish and Game Code.

Affected Environment

Information for this section was derived from the Biological Assessment (Caltrans, 2008) and the Natural Environment Study (Caltrans, 2008). A Species List of proposed and listed federal species was obtained from US Fish and Wildlife Service dated March 24, 2008 (see Appendix E). Of this list, the project limits and immediate vicinity contains suitable habitat for the following species: Northern California Steelhead, Coho Salmon, Chinook Salmon, Marbled Murrelet, Northern Spotted Owl, Pacific Fisher, and Bald Eagle. Designated Critical Habitat for

the Marbled Murrelet is also identified on the list. For the remaining animal species on the list provided by US Fish and Wildlife Service, one or more essential habitat elements are absent from the proposed project area and it is not anticipated that these species are present within the project limits.

The Northern California Steelhead is federally listed as threatened and is a California Department of Fish and Game Species of Concern. This species spends its adult life in the Pacific Ocean but spawns in coastal streams and rivers over gravel beds. There is suitable habitat present for this species in Durphy Creek, which flows through a concrete box culvert under Route 101 within the project limits. The Steelhead are also present in the South Fork of the Eel River, which is adjacent to, but beyond the project limits.

The Coho Salmon is federally and state listed as threatened. The Coho spends its adult life in the Pacific Ocean, but spawns in coastal streams and rivers, over gravel beds. There is suitable habitat present for this species in Durphy Creek, which flows through a concrete box culvert under Route 101 within the project limits. The Coho are also present in the South Fork of the Eel River, which is adjacent to, but beyond the project limits.

The Chinook Salmon is federally listed as threatened. The Chinook spends its adult life in the Pacific Ocean, but spawns in coastal streams and rivers, over gravel beds. There is suitable habitat present for this species in Durphy Creek, which flows through a concrete box culvert under Route 101 within the project limits. The Coho are also present in the South Fork of the Eel River, which is adjacent to, but beyond the project limits.

The Marbled Murrelet is federally listed as a threatened species and state listed as endangered. It is a small seabird in the auk family that is found on the Pacific Coast from southern Alaska to just south of San Francisco Bay in California. The Marbled Murrelet nests in mature Douglas fir and redwood forest communities within 35 miles of the ocean. Breeding Marbled Murrelets use river corridors as flyways between foraging areas in the Pacific Ocean and inland nesting areas. The South Fork Eel River corridor is suitable as migration habitat for Murrelets adjacent to Route 101.

On May 24, 1996 US Fish and Wildlife Service designated critical habitat for the Marbled Murrelet including 39,958 acres in southern Humboldt County administered by the California Department of Parks and Recreation including Richardson Grove State Park. Primary constituent elements of the designated critical habitat for the Marbled Murrelet consist of physical and biological features that are essential to the conservation of the species within areas occupied by the species at the time of listing that may require special management considerations and protection. These include such factors as space for individual and population growth and for

normal behavior, food, water, air, light, minerals, cover or shelter, sites for breeding and rearing of offspring, and habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of a species.

For the Marbled Murrelet, the US Fish and Wildlife Service has identified the following as primary constituent elements: 1) forested stands containing large-sized trees, generally more than 32 inches in diameter with potential nesting platforms at sufficient height (generally greater than or equal to 33 feet in height); and 2) the surrounding forested area within a half mile.

The Northern Spotted Owl is federally listed as threatened and is listed by the California Department of Fish and Game as a Species of Concern. This species is found on the Pacific coast from southwestern British Columbia to San Francisco in California. Nesting and roosting habitat for this species typically includes a diverse multi-layered tree canopy consisting of large overstory trees over 30 inches in diameter with a moderate to high canopy closure (60 to 80 percent); a high incidence of large trees with various deformities (e.g., large cavities, snags, mistletoe infestations); large accumulations of fallen trees and other woody debris on the ground; and sufficient open space below the canopy for flight. This type of habitat is present in the project area, however, there is no designated critical habitat for the northern spotted owl within the project area. A search of the California Natural Diversity Database shows that the nearest known nest location is about one half mile from the project area.

The Pacific Fisher is a federal Candidate for listing and a California Department of Fish and Game Species of Concern. The fisher is a member of the weasel family, and is related to mink, otters, and martins. The fisher inhabits old-growth forests and once ranged from British Columbia through Northern California and the Sierra Nevada. The fisher requires intermediate to large tree stages of dense coniferous forests and deciduous-riparian areas with a high percent of canopy closure. There is suitable habitat within the project limits. The fisher is intolerant of high human activity levels.

The Bald Eagle, recently delisted by the US Fish and Wildlife Service, is state listed as threatened. They nest and roost in large diameter trees or snags near large bodies of water where prey is abundant. There is suitable habitat present within the project limits.

Environmental Consequences

Northern California Steelhead, Coho Salmon, and Chinook Salmon are likely present in Murphy Creek, however no work will be done within the bed, bank, or channel of this stream. These species are also present in the South Fork of the Eel River but no adverse impacts resulting from

the project are anticipated to occur to the South Fork Eel River. It was determined that there would be “No Effect” to these species.

Although there is some suitable habitat for the Pacific Fisher within the project limits, the disturbance generated by the current levels of human activity by the campgrounds, the highway, and the residences make it low value as Fisher habitat and they are not likely to be present within the project limits. If present, the additional noise and activity disturbance caused by construction would not substantially exceed the existing disturbance levels. During night work, lighting would be directed downward toward the roadway and would not substantially exceed the level of disturbance caused by the existing traffic headlights. Therefore, the proposed project will not adversely affect the Pacific Fisher. Should the Fisher become listed prior to or during construction, Section 7 consultation would be reinitiated.

Although the large trees within the project limits in Richardson Grove State Park may provide some elements of suitable habitat for the Bald Eagle, these trees will not be removed by the proposed project. Construction activity is not expected to substantially exceed the noise and activity level from the existing highway and campground. During any night work, lighting would be directed downward toward the roadway and would not substantially exceed the level of disturbance caused by the existing traffic headlights. Therefore, the proposed project will not adversely affect Bald Eagles or their habitat.

On September 17, 2007, a site visit with Ray Bosch and Bill McIver of US Fish and Wildlife Service was held to discuss potential impacts from the project. On May 8, 2008 a site visit with Scott Bauer and Michael Van Hattem of California Department of Fish and Game was held to discuss the potential impacts to the state listed Marbled Murrelet. A Biological Assessment was prepared to comply with Section 7 of the federal Endangered Species Act to discuss the impacts to Marbled Murrelet, Northern Spotted Owl, and designated Critical Habitat for the Marbled Murrelet. The Biological Assessment that was prepared for this project did not include Bald Eagle, Coho, Chinook, or Steelhead species since no adverse effects to these species are anticipated to occur as a result of the project. The Biological Assessment is currently under review by the US Fish and Wildlife. A Consistency Determination for impacts to Marbled Murrelets as required under Section 2080.1 of the Fish and Game Code will be submitted to California Department of Fish and Game.

Marbled Murrelet:

Although the large redwood and Douglas fir trees within the project limits in the park may provide elements of suitable nesting habitat, these trees will not be substantially impacted by this project. The habitat within the project limits is not high quality due to the presence of the

highway and campgrounds. Noise, lights, and activity disturbance generated by the construction of this project may disturb breeding and migration patterns in the project area. However, the disturbance will be short-term and restricted to the immediate vicinity of the roadway, which already experiences moderately high levels of disturbance. In addition, a number of trees serve as a visual and noise screen between the river and project construction area. The construction activity will not substantially exceed the existing disturbance levels present with the roadway traffic and the campground activities, thus, the project is not anticipated to substantially disturb migrating Marbled Murrelet. Any night work performed will have the necessary lighting directed downward toward the roadway and will not substantially exceed the level of disturbance of the existing traffic headlights. However, due to the sensitivity of the species, it was determined that the project “May Affect, and is likely to Adversely Affect” Marbled Murrelet.

There is not much known about the population numbers for Marbled Murrelet in this area. Consultation with US Fish and Wildlife Service staff determined that mitigation would be desired to offset any impacts to this species. It was determined to provide mitigation that helps in the conservation of this species. A two-year survey will be conducted in association with State Parks to document presence of any Marbled Murrelet in the project area. Additionally, the proposed project will provide an enhancement feature for the habitat by reducing the numbers of predators in the vicinity of the project area.

Nest predation by ravens (*Corvus corax*), American crows (*Corvus brachyrhynchos*), and Steller’s jays (*Cyanocitta stelleri*) is the primary cause of Marbled Murrelet nest failure. Generically termed “corvids”, these birds are known to take both eggs and chicks from the nest. Studies have suggested that corvid density is especially high in campgrounds as they often scavenge human garbage and discarded food around picnic tables and elsewhere. Studies have found that reducing the food sources adjacent to areas of listed species activity by using corvid-proof garbage cans, can be effective in discouraging corvids (Liebezeit and George, 2002). Coordinating with Richardson Grove State Park Ranger, Tim Wallace, it was determined that thirteen garbage cans in the campgrounds currently were of a design that did not satisfactorily repel corvids.

Caltrans will provide California Department of Parks and Recreation 13 corvid-proof waste receptacles to replace the existing trash containers near parking, picnic, and camping areas in Richardson Grove State Park.

Designated Critical Habitat:

The largest Douglas fir being removed by the project is 24 inches in diameter. The largest redwood to be removed is 16 inches in diameter. Thus, no trees suitable for nesting would be

removed as a result of the project. The trees adjacent to the roadway do not provide ideal habitat for the Murrelet Murrelet as the adjacent roadway opens the tree canopy, which provides less protection from predators and is not a preferred location for young fledglings.

The existing tanoak woodlands constitute one of the primary constituent elements of the designated Critical Habitat for Marbled Murrelet (surrounding forested area within half mile of suitable forests with trees over 32 inches in diameter). Although there will be impacts to this surrounding forested area, the tree removal consists of primarily understorey tan oak trees. Approximately ¼ acre of these tanoak woodlands would be removed as a result of the project. Their quality as such, however, is reduced by their close proximity to the highway, businesses, and residences.

It was determined that the project is not likely to adversely modify designated critical habitat for the Marbled Murrelet.

Northern Spotted Owl:

Although the large trees within the project limits in the park may provide elements of suitable nesting habitat, these trees would not be substantially impacted by this project. The habitat within the project limits is not high quality due to the presence of the highway and campgrounds. The noise, light, and activity disturbance generated by the construction of this project will not substantially exceed the existing disturbance levels present with the roadway traffic and the campground activities. Any night work performed will have the necessary lighting directed downward toward the roadway and will not substantially exceed the level of disturbance of the existing traffic headlights. It is not anticipated that construction activities would result in substantial adverse impacts to any known nesting sites.

Approximately ¼ acre of tanoak woodlands would be removed as a result of the project. It may take ten years or more for the trees that will be replanted to reach the size of the ones that are to be removed for this project. These woodlands are marginal dispersal and foraging habitat for the Northern Spotted Owl. Their quality as such, however, is reduced by their close proximity to the highway, businesses, and residences.

Due to the sensitivity of the species, it has been determined that the proposed project “May Affect, and is likely to Adversely Affect” Northern Spotted Owls.

Avoidance, Minimization, and/or Mitigation Measures

Mitigation Measures include the following:

M-1: Restorative planting of 0.57 acre of former Route 101 roadbed alignment. Once the planting has become established, this area will be removed from the California Department of Transportation easement and transferred back to the California Department of Parks and Recreation.

M-3: A two year survey by a qualified biologist to document the presence of any Marbled Murrelet within the project limits and vicinity will be performed.

M-4: Caltrans will provide California Department of Parks and Recreation 13 corvid-proof waste receptacles to replace the existing trash containers near parking, picnic, and camping areas in Richardson Grove State Park.

Other avoidance and minimization measures include:

The 300 foot retaining wall at the northern portion of the project which replaced the need for a large cut was proposed in order to reduce the number of trees that would have been taken. Installation of the wall preserved approximately 33 trees which represent marginal foraging and dispersal habitat for Northern Spotted Owl.

2.3.5. INVASIVE SPECIES

Regulatory Setting

On February 3, 1999, President Clinton signed Executive Order 13112 requiring federal agencies to combat the introduction or spread of invasive species in the United States. The order defines invasive species as “any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem whose introduction does or is likely to cause economic or environmental harm or harm to human health.” Federal Highway Administration guidance issued August 10, 1999 directs the use of the state’s noxious weed list to define the invasive plants that must be considered as part of the NEPA analysis for a proposed project.

Affected Environment

Several invasive plant species can be found within the project area. French broom (*Genista monspessulana*), Himalayan blackberry (*Rubus discolor*), fennel (*Foeniculum vulgare*), perennial sweetpea (*Lathyrus latifolius*), and yellow star thistle (*Centaurea solstitialis*) are all exotic invasive species and can be found along the highway corridor throughout Humboldt County including Richardson Grove. A number of common exotic grass and herb species can also be found along the highway shoulders in Richardson Grove.

Environmental Consequences

The project will result in approximately 1.07 acres of disturbed area. Some invasive plant species thrive in disturbed areas. Revegetation can minimize the likelihood of invasive species re-establishing, however it can also provide a seed source for new invasive species.

Most of the areas subject to vegetation removal and soil disturbance in the project area will be revegetated. Revegetation would consist of an application of local native mulch (the original topsoil including duff that was removed and stored from the cut slope areas and chips from trees and shrubs that are removed) for erosion control. This native mulch could contain seeds of existing invasive species that are present throughout the project limits. Thus, weed removal will be a necessary component of the revegetation effort. Weed removal in the project area would utilize physical control methods (e.g., hand pulling), and would be conducted during the planting and plant establishment period (4 years) for non-native invasive species such as French broom, fennel, and perennial sweetpea.

None of the species on the California list of noxious weeds is currently used by Caltrans for erosion control or revegetation in this project. See the Revegetation proposal (Appendix J) for a species list of plants to be used in the revegetation effort.

Avoidance, Minimization, and/or Mitigation Measures

In compliance with the Executive Order on Invasive Species, E.O. 13112, and subsequent guidance from the Federal Highway Administration, the revegetation and erosion control included in the project will not use species listed as noxious weeds. In areas of particular sensitivity, extra precautions will be taken if invasive species are found in or adjacent to the construction areas. These include the inspection and cleaning of construction equipment and eradication strategies to be implemented should an invasion occur.

Weed removal will be a necessary component of the revegetation effort. Weed removal in the project area will utilize physical control methods (e.g., hand pulling), and will be conducted during the planting and plant establishment period (4 years) for non-native invasive species such as French broom, fennel, and perennial sweetpea.

2.4. CUMULATIVE IMPACTS

Regulatory Setting

Cumulative impacts are those that result from past, present, and reasonably foreseeable future actions, combined with the potential impacts of this project. A cumulative effect assessment looks at the collective impacts posed by individual land use plans and projects. Cumulative impacts can result from individually minor, but collectively substantial impacts taking place over a period of time.

Cumulative impacts to resources in the general project vicinity may result from residential, commercial, industrial, and highway development, as well as from agricultural development and the conversion to more intensive types of agricultural cultivation. These land use activities can degrade habitat and species diversity through consequences such as displacement and fragmentation of habitats and populations, alteration of hydrology, contamination, erosion, sedimentation, disruption of migration corridors, changes in water quality, and introduction or promotion of predators. They can also contribute to potential community impacts identified for the project, such as changes in community character, traffic patterns, housing availability, and employment.

CEQA Guidelines, Section 15130, describes when a cumulative impact analysis is warranted and what elements are necessary for an adequate discussion of cumulative impacts. The definition of cumulative impacts, under CEQA, can be found in Section 15355 of the CEQA Guidelines. A definition of cumulative impacts, under NEPA, can be found in 40 CFR, Section 1508.7 of the CEQ Regulations.

Environmental Consequences

The primary environmental effects that require a cumulative impact analysis are impacts to mature redwood forest and impacts to listed species. In the proximity of the proposed project, the majority of mature redwood forest areas are protected and managed by the State Park. The greatest impact on redwood forests has been from logging operations since the 1850s. Today, 85,000 acres of “old growth”⁶ redwood forest remain from the historic two million acres. Of this, over 70% is in public lands. Immediately north and south of the proposed project there is some mature redwood forest held in private ownership, but the area is not very developable due to the steep terrain and there is no known large developments being proposed for the area.

⁶ Old growth forest is typically a redwood forest that has not been logged and shows little or no evidence of disturbance

There are some Caltrans projects that have recently been completed, or are planned in a five mile radius north and south of the proposed project. They are listed below.

<u>County/Route</u>	<u>PM</u>	<u>Project Name</u>	<u>Construction Start Date</u>
HUM 101	5.63	Replace Seal Joints on Bridge (406304)	2008
HUM 101	0.5/13.5	Culvert Replacement (451704)	2007
HUM 101	0.0/17.9	Maintenance Cold Planing (473104)	2006
HUM 101	8.4/137.0	Install Exit Signs (440404)	2006
HUM 101	2.4/65.3	Culvert Rehabilitation (404804)	2003
HUM 101	0.35/73.9	Install Culvert Markers (433804)	2003
MEN 101	1.54/106		
Hum 101	7.48/107.2	Sign Modifications (443704)	2006
MEN 101	31.7/105.1		
HUM 101	0.18/28.5	Install Reflective Pavement Markers (439504)	2003
MEN 101	92.45/100.0		
MEN 101	19.5/103.9	Install Exit Signs (440305)	2003
MEN 101	99.5/100.5	Slide Removal & Crib Wall Repair (444004)	2003
MEN 101	99.5/100.5	Slide Removal & Construct Rock Fence (446604)	2003
MEN 101	35.5/105	Metal Beam Guardrail Repair/Replace (435004)	2004
MEN 101	85.4/106.8	Maintenance Cold Planing & Surfacing (473004)	2006
MEN 101	99.5/100.5	Slide Removal & Retaining Wall Repair (470104)	2007
MEN 101	98.5/100.9	Realign Hwy and Construct New Bridges at Confusion Hill	2006

With the exception of the Confusion Hill Realignment project, the projects listed above were improvements to the existing roadway and did not result in redwood tree removal or other

substantial adverse impacts to redwoods or listed species. The Confusion Hill project did remove redwood trees. The four largest redwoods removed ranged from 35 inches to 39 inches in diameter. The Confusion Hill project was not within designated Marbled Murrelet Critical Habitat. Surveys conducted in 2004 and 2005 did not detect the presence of any Marbled Murrelet within or immediately adjacent to the project limits. While there were Northern Spotted Owls detected in the survey conducted in 2004 and 2005, the nearest nest was ¼ mile from the project limits. The Confusion Hill project was the only project from the list above that required any mitigation.

The proposed project at Richardson Grove will not result in any removal of large redwood trees. There are seven redwood trees that would be proposed for removal that range in size from four to sixteen inches in diameter. It is expected that the project would result in some impacts to the roots of larger redwood trees in Richardson Grove State Park, but these impacts are not anticipated to result in substantial adverse impacts with the proposed minimization and mitigation measures in place. There are no known Marbled Murrelets in close proximity of the proposed project and the nearest Northern Spotted Owl nest is ¼ mile away. The proposed project will not adversely modify designated Critical Habitat for the Marbled Murrelet. Due to the minimal long term impacts to Marbled Murrelet, Northern Spotted Owl, and the designated Critical Habitat, as well as the conservation and enhancement mitigation measures incorporated into the project, impacts to the listed species are not anticipated to result in substantial adverse impacts. With the incorporation of minimization and mitigation measures, it has been determined that the proposed project would not result in significant cumulative impacts.

Chapter 3. CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) EVALUATION

3.1. DETERMINING SIGNIFICANCE UNDER CEQA

The proposed project is a joint project by the California Department of Transportation (Department) and the Federal Highway Administration (FHWA) and is subject to state and federal environmental review requirements. Project documentation, therefore, has been prepared in compliance with both the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). FHWA's responsibility for environmental review, consultation, and any other action required in accordance with NEPA and other applicable Federal laws for this project is being, or has been, carried out by the Department under its assumption of responsibility pursuant to 23 U.S.C. 327. The Department is the lead agency under CEQA and NEPA.

One of the primary differences between NEPA and CEQA is the way significance is determined. Under NEPA, significance is used to determine whether an EIS, or some lower level of documentation, will be required. NEPA requires that an EIS be prepared when the proposed federal action (project) *as a whole* has the potential to "significantly affect the quality of the human environment." The determination of significance is based on context and intensity. Some impacts determined to be significant under CEQA may not be of sufficient magnitude to be determined significant under NEPA. Under NEPA, once a decision is made regarding the need for an EIA, it is the magnitude of the impact that is evaluated and no judgment of its individual significance is deemed important for the text. NEPA does not require that a determination of significant impacts be stated in the environmental documents.

CEQA, on the other hand, does require the Department to identify each "significant effect on the environment" resulting from the project and ways to mitigate each significant effect. If the project may have a significant effect on any environmental resource, then an EIR must be prepared. Each and every significant effect on the environment must be disclosed in the EIR and mitigated if feasible. In addition, the CEQA Guidelines list a number of mandatory findings of significance, which also require the preparation of an EIR. There are no types of actions under NEPA that parallel the findings of mandatory significance of CEQA. This chapter discusses the effects of this project and CEQA significance.

3.2. DISCUSSION OF SIGNIFICANCE OF IMPACTS

3.2.1. Less than Significant Effects of the Proposed Project

Less than significant effects of the proposed project include impacts to mature redwood trees, aesthetics, cultural resources, impacts to the community and Richardson Grove State Park.

3.2.2. Significant Environmental Effects of the Proposed Project

No significant environmental effects are expected as a result of this project.

3.2.3. Unavoidable Significant Environmental Effects

No unavoidable significant environmental effects are expected as a result of this project.

3.3. MITIGATION MEASURES FOR SIGNIFICANT IMPACTS UNDER CEQA

None

3.4. CLIMATE CHANGE

Regulatory Setting

While climate change has been a concern since at least 1988, as evidenced by the establishment of the United Nations and World Meteorological Organization's Intergovernmental Panel on Climate Change (IPCC), the efforts devoted to greenhouse gas⁷ (GHG) emissions reduction and climate change research and policy have increased dramatically in recent years. In 2002, with the passage of Assembly Bill 1493 (AB 1493), California launched an innovative and pro-active approach to dealing with GHG emissions and climate change at the state level. AB 1493 requires the Air Resources Board (ARB) to develop and implement regulations to reduce automobile and light truck GHG emissions; these regulations will apply to automobiles and light trucks beginning with the 2009 model year.

On June 1, 2005, Governor Arnold Schwarzenegger signed Executive Order S-3-05. The goal of this Executive Order is to reduce California's GHG emissions to: 1) 2000 levels by 2010, 2) 1990 levels by the 2020 and 3) 80% below the 1990 levels by the year 2050. In 2006, this goal was further reinforced with the passage of Assembly Bill 32 (AB 32), the Global Warming Solutions Act of 2006. AB 32 sets the same overall GHG emissions reduction goals while further mandating that ARB create a plan, which includes market mechanisms, and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." Executive Order S-20-06 further directs state agencies to begin implementing AB 32, including the recommendations made by the state's Climate Action Team.

7 Greenhouse gases related to human activity include: Carbon dioxide, Methane, Nitrous oxide, Tetrafluoromethane, Hexafluoroethane, Sulfur hexafluoride, HFC-23, HFC-134a*, and HFC-152a*.

With Executive Order S-01-07, Governor Schwarzenegger set forth the low carbon fuel standard for California. Under this executive order, the carbon intensity of California's transportation fuels is to be reduced by at least 10 percent by 2020.

Climate change and GHG reduction is also a concern at the federal level; at this time, no legislation or regulations have been enacted specifically addressing GHG emissions reductions and climate change. However, California, in conjunction with several environmental organizations and several other states, sued to force the U.S. Environmental Protection Agency (EPA) to regulate GHGs as a pollutant under the Clean Air Act (Massachusetts vs. Environmental Protection Agency et al., U.S. Supreme Court No. 05-1120. 549 U.S._____. Argued November 29, 2006—Decided April 2, 2007). The court ruled that GHGs do fit within the Clean Air Act's definition of a pollutant, and the EPA does have the authority to regulate GHGs. Despite the Supreme Court ruling, there are no promulgated federal regulations to date limiting greenhouse gas emissions. EPA is currently determining the implications to national policies and programs as a result of the Supreme Court decision.

Environmental Consequences

According to a recent white paper by the Association of Environmental Professionals⁸, "an individual project does not generate enough greenhouse gas emissions to significantly influence global climate change. Global climate change is a cumulative impact; a project participates in this potential impact through its incremental contribution combined with the cumulative increase of all other sources of greenhouse gases.

The Department and its parent agency, the Business, Transportation, and Housing Agency, have taken an active role in addressing GHG emission reduction and climate change. Recognizing that 98 percent of California's GHG emissions are from the burning of fossil fuels and 40 percent of all human made GHG emissions are from transportation, the Department has created and is implementing the *Climate Action Program at Caltrans* (December 2006). Transportation's contribution to GHG emissions is dependent on 3 factors: the types of vehicles on the road, the type of fuel the vehicles use, and the time/distance the vehicles travel."

One of the main strategies in the Department's Climate Action Program to reduce GHG emissions is to make California's transportation system more efficient. The highest levels of carbon dioxide from mobile sources, such as automobiles, occur at stop-and-go speeds (0-25 miles per hour) and speeds over 55 mph; the most severe emissions occur from 0-25 miles per hour (see Figure 11 below). To the extent that a project relieves congestion by enhancing

8 Hendrix, Michael and Wilson, Cori. Recommendations by the Association of Environmental Professionals (AEP) on How to Analyze Greenhouse Gas Emissions and Global Climate Change in CEQA Documents (March 5, 2007), p. 2.

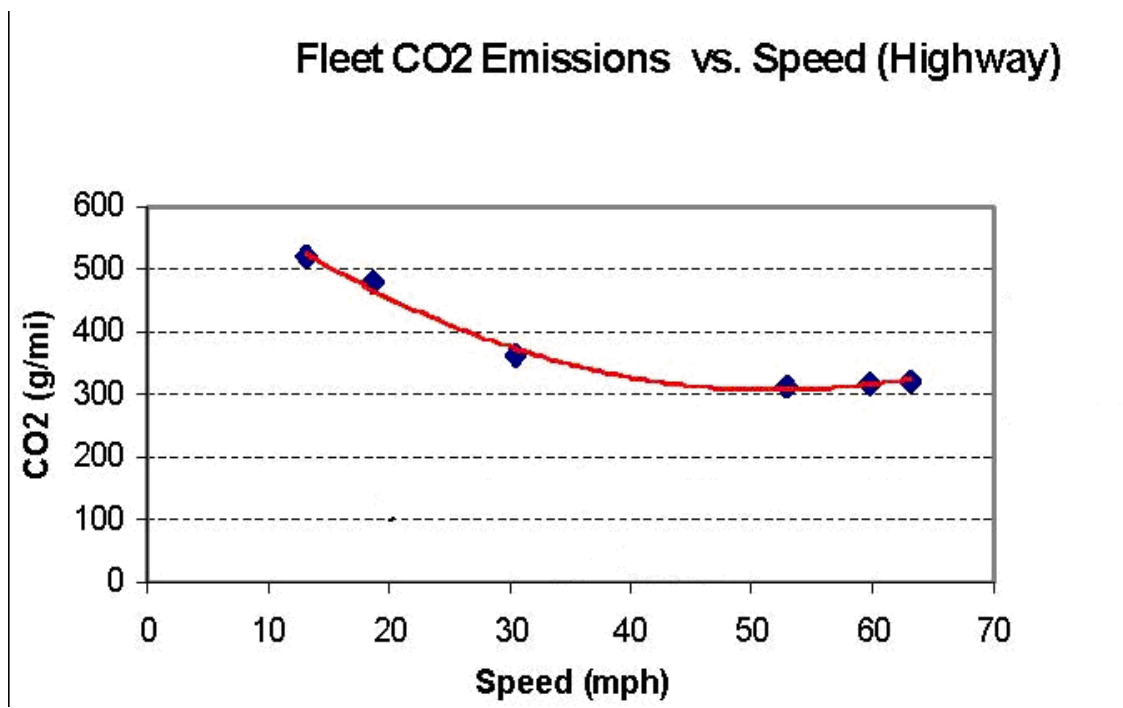
operations and improving travel times in high congestion travel corridors GHG emissions, particularly CO₂ will be reduced.

The Department recognizes the concern that carbon dioxide emissions raise for climate change. However, modeling and gauging the impacts associated with an increase in GHG emissions levels, including carbon dioxide, at the project level is not currently possible. No federal, state or regional regulatory agency has provided methodology or criteria for GHG emission and climate change impact analysis. Therefore, the Department is unable to provide a scientific or regulatory based conclusion regarding whether the project's contribution to climate change is cumulatively considerable.

The Department continues to be actively involved on the Governor's Climate Action Team as ARB works to implement AB 1493 and help achieve the targets set forth in AB 32. Many of the strategies the Department is using to help meet the targets in AB 32 come from the California Strategic Growth Plan, which is updated each year. Governor Arnold Schwarzenegger's Strategic Growth Plan (SGP) calls for a \$222 billion infrastructure improvement program to fortify the state's transportation system, education, housing, and waterways, including \$107 in transportation funding during the next decade.

As part of the *Climate Action Program at Caltrans* (December 2006), the Department is supporting efforts to reduce vehicle miles traveled by planning and implementing smart land use strategies: job/housing proximity, developing transit-oriented communities, and high density housing along transit corridors. The Department is working closely with local jurisdictions on planning activities; however, the Department does not have local land use planning authority. The Department is also supporting efforts to improve the energy efficiency of the transportation sector by increasing vehicle fuel economy in new cars, light and heavy-duty trucks. However it is important to note that the control of the fuel economy standards is held by the United States Environmental Protection Agency and ARB. Lastly, the use of alternative fuels is also being considered; the Department is participating in funding for alternative fuel research at the University of California Davis.

Figure 11 Fleet CO₂ Emissions vs Speed (Highway)



Source: Center for Clean Air Policy— [http://www.ccap.org/Presentations/Winkelman%20TRB%202004%20\(1-13-04\).pdf](http://www.ccap.org/Presentations/Winkelman%20TRB%202004%20(1-13-04).pdf)

Chapter 4. COMMENTS AND COORDINATION

Early and continuing coordination with the general public and appropriate public agencies is an essential part of the environmental process to determine the scope of environmental documentation, the level of analysis, potential impacts and mitigation measures and related environmental requirements. Agency consultation and public participation for this project have been accomplished through a variety of formal and informal methods, including: project development team meetings, interagency coordination meetings, presentations to community groups, and informal public meetings. This chapter summarizes the results of the Department's efforts to fully identify, address and resolve project-related issues through early and continuing coordination.

Two public meetings in addition to the Scoping Meeting have been held during the project development phase of the project in advance of the circulation of the environmental document. Each of these meetings were advertised in local newspapers. The first occurred on September 26, 2007 and was held in Benbow, located just a few miles north of the project. This meeting utilized the "open house" style which consisted of no formal presentation, but presented various exhibits and maps which were available for review. Staff were available to answer questions and comment cards were available for attendees. Approximately 40 people attended. The primary issues raised at the meeting was the desire for an EIR to be prepared, concern about traffic queues blocking business access, concern about impacts to large redwood trees, and the desire for the trees proposed for removal to be marked in the field.

On February 20, 2008 an additional public meeting was held in Eureka. This meeting format combined both an open house style meeting as well as a panel to address questions raised by the attendees. About 125 people attended resulting in 13 comment cards being submitted. The issues raised included: impacts to designated Critical Habitat for the Marbled Murrelet, impacts to large redwood trees, opposing any changes to the highway segment through the Park, concern about potential impacts to tourism, and support for the proposed project.

A Scoping Meeting was held May 14, 2008 at the River Lodge in Fortuna. This meeting was advertised in the Times Standard newspaper in advance of the meeting. This meeting was also held in the "open house" style. Approximately 25 members of the public attended and 24 comment cards, 15 letters, and a petition were received. The majority of comments received at this meeting were to state support for the project. The issues raised in the letters included supporting the no-build alternative, support for reducing speed limit, concern about potential economic and growth-inducing impacts resulting from the project, potential for increasing geologic instability as a result of tree removal north of the park, as well as concern for impacts to

the to the amenities and experience of the visitors to the State Park. The petition signed by seven individuals, opposed the project and requested that an EIS/EIR be prepared for the project.

Several presentations about the proposed project have been provided to civic groups including: Northcoast Prosperity Network, Fortuna Rotary Club, Citizens for Port Development and the Fortuna Chamber of Commerce. Caltrans representatives also attended a Board Meeting of the Northcoast Environmental Center on January 24, 2008 when Richardson Grove was a topic on the agenda. Two on-site field meetings to discuss the project impacts with various environmental group representatives including EPIC, Friends of the Eel River, Northcoast Environmental Center, Piercy Watershed Association, Trees Foundation, California Department of Parks and Recreation, and Piercy Fire Protection District were held on January 28, 2008 and March 28, 2008. A pre-project meeting with agency and political representatives from state, local, and tribal governmental entities was held on June 28, 2007.

Numerous press releases and articles have been written about the project and the meetings held about the project. In addition, there have been occasional radio talk shows and news items on the local television news about the project. Information as well as the exhibits displayed at the public meetings have also been posted on the Caltrans website throughout the project development process.

Several meetings have been held with staff from US Fish and Wildlife Service, Native American groups, California Department of Fish and Game, and California Department of Parks and Recreation to discuss the project and the potential impacts. An on-site meeting was held June 30, 2008 with staff from Army Corps of Engineers, California Department of Fish and Game, and Regional Water Quality Control Board to discuss the applicable permits and the likely permit conditions that would be needed for each of the agencies.

Consultation efforts in compliance with Section 4(f) of the Department of Transportation Act included preparation of Programmatic 4(f) Evaluation and review and concurrence by staff from the North Coast Redwoods District Office of the California Department of Parks and Recreation which manages Richardson Grove State Park. Compliance with Section 106 of the National Historic Preservation Act included consulting with State Park District archaeologist, the State Park architectural historian, the State Park District landscape architect, and the Native American Heritage Commission in addition to several Native American groups listed in the cultural resources section of this document. The Historic Properties Survey Report prepared for this project was reviewed by the State Park archaeologist and staff from the Intertribal Sinkyone Wilderness Council and approved by the California Office of Historic Preservation (OHP) regarding impacts to cultural resources. The concurrence letter from OHP is included in

Appendix F. Consultation efforts in compliance with Section 7 of the federal Endangered Species Act included review of the Biological Assessment by the US Fish and Wildlife Service (USFWS) regarding impacts to listed species. It is anticipated that USFWS will prepare a Biological Opinion for this project. Also consulted with Michael Van Hattem of CFG regarding impacts to the state listed Marbled Murrelet. Consultation in compliance with the Wild and Scenic Rivers Act is ongoing with the National Park Service.

Permits will be required for the culvert improvements from US Army Corps of Engineers, California Department of Fish and Game, and the Regional Water Quality Control Board.

Chapter 5. LIST OF PREPARERS

Cindy Anderson, Supervising Environmental Planner

Troy Arseneau, Senior Transportation Engineer. Prepared Transportation Management Plan, Energy Analysis

Alicia Boomer, Environmental Planner. Prepared Growth Analysis Study

James Von Bonn, Transportation Engineer

Kim Floyd, Project Manager

Kathy Gallagher, Transportation Engineer. Prepared the Foundation Report

Dr. David Gallo, Professor, Chico State University. Prepared Economic Study

Gemma G. Reblando, Geocon Consultants, Inc., Project Geologist-Aerially Deposited Lead Site Investigation Report. February 2008

Clare Golec, Environmental Planner, Revegetation Specialist. Prepared Revegetation Plan.

Cindy Graham, Senior Transportation Engineer

Deborah L. Harmon, Senior Environmental Planner. Prepared the DEIR/EA.

Jim Hibbert, Landscape Architect. Prepared Visual Impact Assessment

Nancy Hueske, Right of Way Agent

Tim Keefe, Archaeologist. Prepared Historic Properties Survey Report

Eric Lund, Transportation Engineer

Charlie Narwold, Senior Engineering Geologist. Prepared the Foundation Report

Gail Popham, Biologist. Prepared Biological Assessment and Natural Environment Study

Darin Sullivan, Tree Maintenance Supervisor

Susan Tappan, Senior Transportation Engineer

Kelly Timmons, Transportation Engineer.

Steve Werner, Engineering Geologist. Prepared Initial Site Assessment

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California Highway Patrol
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Garberville, CA 95542

California Highway Patrol
540 South Orchard Ave.
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CA Resources Agency
1416 Ninth St., Ste. 1311
Sacramento, CA 95814

Dept. of Conservation
801 K Street, 24th Floor
Sacramento, CA 95814

Jeremiah Puget
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5550 Skylane Blvd., Suite A
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Ray Bosch
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1655 Heindon Rd.
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CA Office of Historic Preservation
P.O. Box 942896
Sacramento, CA 94296 – 0001

U.S. Army Corps of Engineers
1455 Market St., 16th floor
San Francisco, CA 94103-1398

U.S. Environmental Protection Agency
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San Francisco, CA 94105-3901

CA Dept. of Parks and Recreation
North Coast Redwoods District
3431 Fort Ave.
Eureka, CA 95501

CA Air Resources Board
1001 I St
Sacramento, CA 95814-2814

Integrated Waste Management Board
1001 I St
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Ukiah, CA 95482

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777 Sonoma Ave., Room 325
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505 Van Ness Avenue
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Chapter 7. REFERENCES

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North Coast Railroad Authority. February 2007. Strategic Plan Update. Available at [**http://www.northcoastrailroad.org/Acrobat/StrategicUpdate/Strategic_Plan_Update_2-15-07.pdf**](http://www.northcoastrailroad.org/Acrobat/StrategicUpdate/Strategic_Plan_Update_2-15-07.pdf)

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Appendix A CEQA Checklist

Supporting documentation of all CEQA checklist determinations is provided in Chapter 2 of this Initial Study/Environmental Assessment. Documentation of “No Impact” determinations is provided at the beginning of Chapter 2. Discussion of all impacts, avoidance, minimization, and/or compensation measures under the appropriate topic headings in Chapter 2.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
I. AESTHETICS -- Would the project:				
a) Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
II. AGRICULTURE RESOURCES: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
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III. AIR QUALITY -- Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:

- | | | | | |
|---|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
| a) Conflict with or obstruct implementation of the applicable air quality plan? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| d) Expose sensitive receptors to substantial pollutant concentrations? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| e) Create objectionable odors affecting a substantial number of people? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

IV. BIOLOGICAL RESOURCES -- Would the project:

- | | | | | |
|--|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
| a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
V. CULTURAL RESOURCES -- Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Disturb any human remains, including those interred outside of formal cemeteries?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
VI. GEOLOGY AND SOILS -- Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ii) Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iii) Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iv) Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

VII. HAZARDS AND HAZARDOUS MATERIALS –

Would the project:

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
--	--------------------------------------	---	------------------------------------	--------------

VIII. HYDROLOGY AND WATER QUALITY -- Would the project:

- | | | | | |
|---|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
| a) Violate any water quality standards or waste discharge requirements? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| f) Otherwise substantially degrade water quality? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| j) Inundation by seiche, tsunami, or mudflow? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

IX. LAND USE AND PLANNING - Would the project:

- | | | | | |
|--|--------------------------|--------------------------|--------------------------|-------------------------------------|
| a) Physically divide an established community? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|--|--------------------------|--------------------------|--------------------------|-------------------------------------|

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
X. MINERAL RESOURCES -- Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
XI. NOISE –				
Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
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XII. POPULATION AND HOUSING -- Would the project:

- a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?
- b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?
- c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

XIII. PUBLIC SERVICES

- a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

Fire protection?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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Police protection?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
--------------------------	--------------------------	--------------------------	-------------------------------------

Schools?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
--------------------------	--------------------------	--------------------------	-------------------------------------

Parks?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	-------------------------------------	--------------------------

Other public facilities?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
--------------------------	--------------------------	--------------------------	-------------------------------------

XIV. RECREATION –

- a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?
- b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
XV. TRANSPORTATION/TRAFFIC -- Would the project:				
a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Result in inadequate parking capacity?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
XVI. UTILITIES AND SERVICE SYSTEMS – Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g) Comply with federal, state, and local statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
XVII. MANDATORY FINDINGS OF SIGNIFICANCE –				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat or a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of CA history or prehistory?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current project, and the effects of probable future projects)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Appendix B Section 4(f) Evaluation

The environmental review, consultation, and any other action required in accordance with applicable Federal laws for this project is being, or has been, carried-out by the Department under its assumption of responsibility pursuant to 23 U.S.C. 327.

Introduction

Section 4(f) of the Department of Transportation Act of 1966, codified in federal law at 49 U.S. Code, Section 303, declares that “it is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites.”

Section 4(f) specifies that “[t]he Secretary [of Transportation] may approve a transportation program or project . . . requiring the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance, or land of an historic site of national, state, or local significance (as determined by the federal, state, or local officials having jurisdiction over the park, area, refuge, or site) only if:

- there is no prudent and feasible alternative to using that land; and
- the program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use.

Section 4(f) further requires consultation with the Department of the Interior and, as appropriate, the involved offices of the Departments of Agriculture and Housing and Urban Development in developing transportation projects and programs that use lands protected by Section 4(f). If historic sites are involved, then coordination with the State Historic Preservation Officer is also needed.

The programmatic agreement for the Section 4(f) Evaluation and Approval for Federally-aided Highway Projects with Minor Involvements with Public Parks, Recreation Lands, and Wildlife and Waterfowl Refuges (December 23, 1986) applies to the Richardson Grove Operational Improvement project because there are no feasible and prudent alternatives to improving the existing alignment and because all possible planning to minimize harm resulting from such use has been incorporated into the project. This evaluation is made pursuant to Section 4(f) of the Department of Transportation Act of 1966, 49 U.S. Code 202 and Section 18(a) of the Federal-Aid Highway Act of 1968, 23 U.S. Code 138.

List and Description of Section 4(f) Properties

The Section 4(f) resource affected by the proposed project is the Richardson Grove State Park located in southern Humboldt County about 7 miles south of Garberville. Both US Route 101 and the South Fork of the Eel River bisect the park. (See Figure B1) The park encompasses approximately 2000 acres and includes the following amenities: campgrounds including group and hike/bike campgrounds, visitor center, 9 miles of hiking trails including guided hikes and nature trails, historical points of interest, swimming, and fishing. In the summer, evening campfire programs are provided. The most notable feature of the park is the old-growth redwood forest (large, mature redwoods often over five feet or more in diameter). Coming from the south, Richardson Grove State Park is the first stand of old-growth trees that are encountered on Route 101, which has been nicknamed, “the Redwood Highway.” Many of the trees in the grove are more than 1,000 years old and several trees are more than 300 feet tall. The grove includes the ninth tallest coast redwood tree in the world.

Route 101 is within the boundaries of the State Park from the southern terminus of the project to PM 2.05. Route 101 bisects the park and the roadway right of way is contained in a transportation easement for the portion within the park. Portions of the campgrounds and trails as well as the Visitor Center are located adjacent to the roadway. Access to the park is from Route 101. While the campground is open year round, the highest visitor use is from Memorial Day to Labor Day.

Applicability

It is appropriate to apply the Programmatic Section 4(f) Evaluation because of the following:

- The proposed improvements would be federally funded
- The proposed project would require use of publicly owned parks, recreation lands, or wildlife and waterfowl refuges located adjacent to the existing highway
- The proposed project is designed to improve the operational characteristics, safety, and /or physical condition of existing highway facilities on essentially the same alignment.
- The amount and location of the land to be used shall not impair the use of the remaining Section 4(f) land, in whole or in part, for its intended purpose and this determination is concurred with by the officials having jurisdiction over the Section 4(f) lands.
- The total amount of land to be acquired from the Section 4(f) site shall not exceed the following:

Size of Section 4(f) Site

Maximum to be acquired

< 10 acres

10 percent of site

10 acres to 100 acres

1 acre

> 100 acres

1 percent of site

Richardson Grove State Park is approximately 2000 acres. One percent of the site would be 20 acres. The proposed project is acquiring 0.55 acres to be added into the existing highway easement.

- The proximity impacts of the project on the remaining Section 4(f) land shall not impair the use of such land for its intended purpose. This determination is concurred with by the officials having jurisdiction over the Section 4(f) lands and will be documented with regard to noise, air and water pollution, wildlife and habitat effects, aesthetic values, and /or other impacts deemed relevant.
- The officials having jurisdiction over the Section 4(f) lands must agree, in writing, with the assessment of the impacts of the proposed project on, and the proposed mitigation for, the Section 4(f) lands.
- For projects using land from a site purchased or improved with funds under the Land and Water Conservation Fund Act, the Federal Aid in Fish Restoration Act (Dingell-Johnson Act), the Federal Aid in Wildlife Act (Pittman-Robertson Act), or similar laws, or the lands are otherwise encumbered with a Federal interest (e.g., former Federal surplus property), coordination with the appropriate Federal agency is required to ascertain the agency's position on the land conversion or transfer. The programmatic Section 4(f) evaluation does not apply if the agency objects to the land conversion or transfer.
- This Programmatic Evaluation does not apply to a project for which an Environmental Impact Statement (EIS) is prepared, unless the use of Section 4(f) lands is discovered after the approval of the Final EIS.
- Caltrans, as assigned by the Federal Highway Administration, has determined that the facts of the project match those set forth in the sections of this document labeled Alternatives, Findings, and Mitigation.

Alternatives

Acceptable alternatives under the Programmatic Section 4(f) are the following (and only the following):

- Do Nothing
- Improve the highway without using the adjacent public park, recreational land, or wildlife and waterfowl refuge

- Build an improved facility on new location without using public park, recreation land, or wildlife or waterfowl refuge

Findings

Each of these acceptable alternatives is discussed below:

Do Nothing

The Do Nothing (No-Build) Alternative has been studied. This alternative is not feasible and prudent because it would not correct existing operational deficiencies and not providing such correction would result in truly unusual or unique problems when compared with the proposed use of the Section 4(f) lands.

Improvement without Using the Adjacent Section 4(f) Lands

It is not feasible and prudent to avoid Section 4(f) lands. The current alignment bisects the Section 4(f) land and design of the proposed project already incorporates design exceptions and minor realignment shifts to minimize impacts to the Section 4(f) land. The existing highway is in a transportation easement through Richardson Grove State Park allowing little flexibility to implement physical improvements avoiding Section 4(f) lands.

Any avoidance alternative on the existing alignment would require removal of numerous large, mature redwood trees or would accomplish so little that it would compromise the project so that it is unreasonable given the stated purpose and need. The redwood trees are an unique resource and abut the roadway and, in several instances, abut the traveled way. Implementing traffic management measures result in unacceptable safety or operational problems (Refer to “Alternatives considered but eliminated from further discussion” in Chapter 1).

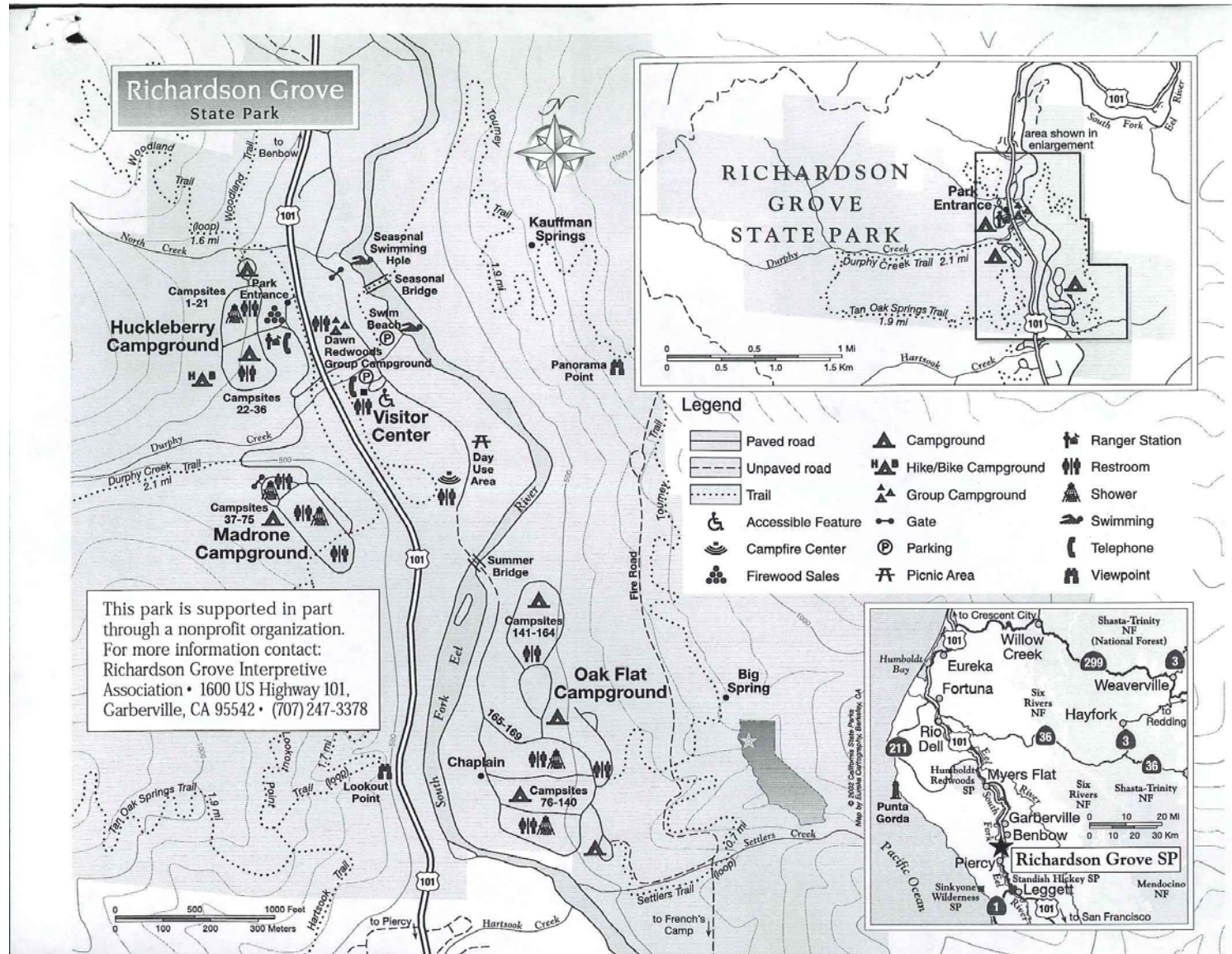
An alternative is not prudent if in order to avoid Section 4(f) lands: 1) it compromises the project so that it is unreasonable given the purpose and need; 2) it results in unacceptable safety or operational problems; 3) it causes, even after reasonable mitigation is incorporated, severe social, economic, or environmental impacts or severe disruption to established communities or severe environmental justice impacts or severe impacts to other federally protected species; 4) it results in additional construction, maintenance, or operational costs of an extraordinary magnitude; 5) it causes other unique problems or unusual factors; or 6) it involves multiple factors listed above that while individually minor, cumulatively cause unique problems or impacts of extraordinary magnitude.

Alternatives on New Location

It is not feasible and prudent to avoid Section 4(f) lands by constructing on new alignment. To avoid using any Section 4(f) land from Richardson Grove State Park would require a three to four mile bypass over steep terrain and result in severe economic and environmental impacts including impacts to other federally protected species. A Feasibility Study prepared in 2001 evaluated bypass alternatives (Refer to “Background” in Chapter 1). The bypass alternatives would result in additional construction, maintenance, and operational costs of an extraordinary magnitude. The bypass alternatives ranged in cost from \$75 - \$600 million not including mitigation costs. The bypass alternatives would require large amounts of excavation ranging from 5 to 68 million cubic yards and would generate substantial excess material ranging from 1 to 55 million cubic yards. Cuts up to 600 feet in height were required. The bypass alternatives also required steep grades or a tunnel under the Section 4(f) land.

Figure B1 Richardson Grove State Park

From Department of Parks and Recreation



Measures to Minimize Harm

The proposed project includes all possible planning to minimize harm within the park.

Mitigation measures shall include:

M-1: Restorative planting of 0.57 acre of former Route 101 roadbed alignment located at approximately PM 1.8. Once the planting has become established, this area will be removed from the California Department of Transportation easement and transferred back to the California Department of Parks and Recreation.

M-2: To offset the impacts to the mature redwood trees where construction occurs within the structural root zone, mitigation will be provided to increase the amount of invasive plant removal. A contract with the California Conservation Corps will be established to provide 300 hours a year for four years (three days each year for a crew of twelve, the minimum crew size). Crew to be directed at the discretion of the California Department of Parks and Recreation.

M-3: A two year survey by a qualified biologist to document the presence of any Marbled Murrelet within the project limits and vicinity will be performed.

M-4: Caltrans will provide California Department of Parks and Recreation 13 corvid-proof waste receptacles to replace the existing trash containers near parking, picnic, and camping areas in Richardson Grove State Park.

Additional Measures to Minimize Harm include:

- Restoration of disturbed areas. Revegetation efforts will adhere to the California Department of State Parks and Recreation Commission Statement of Policy (Policy 11.4) which states, “In order to maintain the genetic integrity and diversity of native California plants, all transplant and propagation in the North Coast Redwoods District will be from the local populations (preferably from within the same stand). For the purpose of this policy, local is defined as being from the immediate project area (as close as possible, but generally less than one mile).”
- Weed removal will be a necessary component of the revegetation effort. Weed removal in the project area will utilize physical control methods (e.g., hand pulling), and will be conducted during the planting and plant establishment period (4 years) for non-native invasive species such as French broom, fennel, and perennial sweetpea.
- To avoid impacts to nesting migratory birds, vegetation removal will occur between September 30 and March 1. If this is not feasible, a qualified biologist will conduct a preconstruction bird survey to ensure that birds are not nesting in any of the vegetation to be removed. This survey would be

conducted not more than 7 days prior to the vegetation removal. If birds are nesting, the nest site will be designated an Environmentally Sensitive Area and the nest left alone until nesting is complete.

- The top 4 inches of duff (redwood tree litter) should be removed, stored at an approved location within the project limits and spread out on exposed disturbed slopes within the park boundary.
- All trees and shrubs removed will be put into a chipper and the chips distributed onto the finished cut-slope as mulch. All areas of disturbed soil will be further stabilized with weed-free mulch after planting if needed.
- Traffic handling to occur such that anticipated maximum delay is 15 minutes and access to the park and park maintenance yard shall be maintained.
- Incorporation of design features (e.g., modifications to the roadway section, minor alignment shifts, design exceptions to the standard design) where necessary to reduce or minimize impacts to the Section 4(f) property including the following:
 - All excavation below the finish grade within a setback equal to three times the diameter of any redwood trees shall be done with shovels, pick axes, or other non-mechanized methods approved by the construction engineer to minimize disturbance or damage to roots with the exception of culvert excavation at PM 1.18, 1.28, 1.34, and 1.35. Mechanized equipment may be used at these locations upon approval of the construction engineer.
 - With exception of the culvert excavation, the contractor will be required to use an air spade while excavating the soil within the structural root zone of redwood trees which will minimize physical injury to the tree roots.
 - Excluding areas of proposed cut, roots less than two inches in diameter that must be cut shall be cut cleanly with sharp instrument in order to promote healing
 - The structural section for new pavement shall use Cement Treated Permeable Base (CTPB) to minimize the thickness of the structural section, provide greater porosity, minimize compaction of roots, and minimize thermal exposure to roots from Hot Mix Asphalt paving
 - In areas where new embankment is to be constructed to protect roots and promote air circulation the following measures shall be used:
 - The existing vegetation needing removal shall be cut flush with the ground and stumps left in place
 - Any duff layer shall be hand raked off the area within the clearing limits, stored, and replaced as erosion control

- A 0.75 foot thick layer of Class 1, Type A permeable material shall be placed and compacted as the first lift of the fill. A layer of filter fabric shall then be applied prior to placing the remaining fill required for the embankment
- In locations where fill would be placed next to the trunk of a redwood tree ≥ 3 feet in diameter, a brow log shall be used to keep the soil from the tree trunk

At archaeological site, P-12-001824:

- Caltrans archaeologist and Native American monitor will be present to monitor all ground disturbing activities in the vicinity of the ESA
- Site will be marked on plans as Environmentally Sensitive Area (ESA)
- ESA will be fenced; fence installation shall occur at least one week prior to any ground disturbing construction work
- ESA will be discussed during the preconstruction meeting with construction personnel stressing that construction activity and personnel must remain outside of ESA at all times
- Caltrans archaeologist will be contacted prior to construction work to ensure their availability to monitor fence installation

Based on the above considerations, there is no feasible and prudent alternative to the use of Richardson Grove State Park property and the proposed action includes all possible planning to minimize harm to the Park resulting from such use.

Appendix C Title VI Policy Statement

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY

ARNOLD SWARTZBERGER, Governor

DEPARTMENT OF TRANSPORTATION
OFFICE OF THE DIRECTOR
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*Use your power!
Be truly efficient!*

January 14, 2005

TITLE VI POLICY STATEMENT

The California Department of Transportation under Title VI of the Civil Rights Act of 1964 and related statutes, ensures that no person in the State of California shall, on the grounds of race, color, national origin, sex, disability, and age, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity it administers.


WILL KEMPTON
Director

"Caltrans improves mobility across California"

Appendix D Minimization and/or Mitigation Summary

Mitigation measures have been identified to offset the impacts to the park, redwood trees, and listed species. They include:

M-1: Restorative planting of 0.57 acre of former Route 101 roadbed alignment. Once the planting has become established, this area will be removed from the California Department of Transportation easement and transferred back to the California Department of Parks and Recreation.

M-2: To offset the impacts to the mature redwood trees where construction occurs within the structural root zone, mitigation will be provided to increase the amount of invasive plant removal. A contract with the California Conservation Corps will be established to provide 300 hours a year for four years (three days each year for a crew of twelve, the minimum crew size). Crew to be directed at the discretion of the California Department of Parks and Recreation.

M-3: A two year survey by a qualified biologist to document the presence of any Marbled Murrelet within the project limits and vicinity will be performed.

M-4: Caltrans will provide California Department of Parks and Recreation 13 corvid-proof waste receptacles to replace the existing trash containers near parking, picnic, and camping areas in Richardson Grove State Park.

Environmental commitments to avoid and minimize impacts would include special construction methods and materials, monitors to ensure biological and cultural resource commitments are adhered to, work windows, water quality protection measures, revegetating areas cleared for construction using natives, removal of invasive vegetation, fencing a buffer area around sensitive plants and cultural resources,

Special construction measures within Richardson Grove State Park include:

All excavation below the finish grade within a setback equal to three times the diameter of any redwood trees shall be done with shovels, pick axes, or other non-mechanized methods approved by the resident engineer to minimize disturbance or damage to roots with the exception of culvert excavation at PM 1.18, 1.28, 1.34, and 1.35. Mechanized equipment may be used at these locations upon approval of the construction engineer.

With exception of the culvert excavation, the contractor will be required to use an air spade while excavating the soil within the structural root zone of redwood trees which will minimize physical injury to the tree roots.

Excluding areas of proposed cut, smaller roots less than two inches in diameter that must be cut shall be cut cleanly with sharp instruments in order to promote healing.

The structural section for new pavement shall use Cement Treated Permeable Base (CTPB) to minimize the thickness of the structural section, provide greater porosity, minimize compaction of roots, and minimize thermal exposure to roots from the hot mix asphalt paving. A 0.75 foot thick layer of Class 1, Type A permeable material shall be placed and compacted as the first lift of the fill to increase water infiltration and air circulation. (In areas next to the shoulder hinge point it might not be possible to provide this much depth. In those cases, as much as feasible will be placed.) A layer of filter fabric shall then be applied prior to placing the remaining fill required for the embankment.

In locations where fill would be placed next to the trunk of a redwood tree ≥ 3 feet in diameter, a brow log shall be used to keep the soil from the tree trunk.

Other minimization measures in effect throughout the project limits include:

Traffic handling to occur such that anticipated maximum delay is 15 minutes and access to businesses, residences, and the park shall be maintained.

In compliance with the Executive Order on Invasive Species, E.O. 13112, and subsequent guidance from the Federal Highway Administration, the revegetation and erosion control included in the project will not use species listed as noxious weeds. In areas of particular sensitivity, extra precautions will be taken if invasive species are found in or adjacent to the construction areas. These include the inspection and cleaning of construction equipment and eradication strategies to be implemented should an invasion occur.

Weed removal will be a necessary component of the revegetation effort. Weed removal in the project area will utilize physical control methods (e.g., hand pulling), and will be conducted during the planting and plant establishment period (4 years) for non-native invasive species such as French broom, fennel, and perennial sweetpea.

To avoid impacts to nesting migratory birds, vegetation removal will occur between September 30 and March 1. If this is not feasible, a qualified biologist will conduct a preconstruction bird survey to ensure that birds are not nesting in any of the vegetation to be removed. This survey would be conducted not more than 7 days prior to the vegetation removal. If birds are nesting,

the nest site will be designated an Environmentally Sensitive Area and the nest left alone until nesting is complete.

Appendix E US Fish and Wildlife Service List

Listed/Proposed Threatened and Endangered Species for Humboldt County (Candidates Included)

March 24, 2008

Document number: 1003525944-103047

KEY:

(PE) Proposed Endangered Proposed in the Federal Register as being in danger of extinction

(PT) Proposed Threatened Proposed as likely to become endangered within the foreseeable future

(E) Endangered Listed in the Federal Register as being in danger of extinction

(T) Threatened Listed as likely to become endangered within the foreseeable future

(C) Candidate Candidate which may become a proposed species Habitat Y = Designated, P = Proposed, N = None Designated

* Denotes a species Listed by the National Marine Fisheries Service

Type	Scientific Name	Common Name	Category	Critical Habitat
Plants				
	<i>Erysimum menziesii</i>	Menzies' wallflower	E	N
	<i>Lilium occidentale</i>	western lily	E	N
	<i>Thlaspi californicum</i>	Kneeland Prairie penny-cress	E	Y
Invertebrates				
*	<i>Haliotis cracherodii</i>	black abalone	PE	N
Fish				
	<i>Eucyclogobius newberryi</i>	tidewater goby	E	Y
*	<i>Oncorhynchus kisutch</i>	S. OR/N. CA coho salmon	T	Y
*	<i>Oncorhynchus mykiss</i>	Northern California steelhead	T	Y
*	<i>Oncorhynchus tshawytscha</i>	CA coastal chinook salmon	T	Y
Reptiles				
*	<i>Caretta caretta</i>	loggerhead turtle	T	N
*	<i>Chelonia mydas (incl. agassizi)</i>	green turtle	T	N
*	<i>Dermochelys coriacea</i>	leatherback turtle	E	Y
*	<i>Lepidochelys olivacea</i>	olive (=Pacific) ridley sea turtle	T	N
Birds				
	<i>Brachyramphus marmoratus</i>	marbled murrelet	T	Y
	<i>Charadrius alexandrinus nivosus</i>	western snowy plover	T	P
	<i>Coccyzus americanus</i>	Western yellow-billed cuckoo	C	N
	<i>Pelecanus occidentalis</i>	brown pelican	E	N
	<i>Phoebastria albatrus</i>	short-tailed albatross	E	N
	<i>Strix occidentalis caurina</i>	northern spotted owl	T	Y
Mammals				
*	<i>Balaenoptera borealis</i>	sei whale	E	N
*	<i>Balaenoptera musculus</i>	blue whale	E	N
*	<i>Balaenoptera physalus</i>	fin whale	E	N
*	<i>Eumetopias jubatus</i>	Steller (=northern) sea-lion	T	Y
	<i>Martes pennanti pacifica</i>	Pacific fisher	C	N
*	<i>Megaptera novaengliae</i>	humpback whale	E	N
*	<i>Physeter macrocephalus</i>	sperm whale	E	N

Appendix F Office of Historic Preservation Concurrence Letter

STATE OF CALIFORNIA – THE RESOURCES AGENCY

ARNOLD SCHWARZENEGGER, Governor

**OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION**

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April 1, 2008

Ms. Deborah Harmon
Department of Transportation
North Region Environmental Services-North
P.O. Box 3700
Eureka, CA 95502-3700

RE: Proposed Richardson Grove STAA Project, Humboldt County, California; FHWA080303B

Dear Ms. Harmon:

Thank you for requesting my comments on the above cited finding. You are initiating this consultation following provisions of the January 2004 *Programmatic Agreement among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California Department of Transportation and Memorandum of Understanding between the Federal Highway Administration, California Division and the California Department of Transportation State Assumption of Responsibility for Categorical Exclusions*. My staff has reviewed the documentation you provided and I would like to offer the following comments.

You have requested my concurrence regarding the National Register of Historic Places eligibility evaluation made pursuant to Stipulation VIII.C.5 of the Programmatic Agreement. You have concluded that the portion of the archaeological site P-12-001824 that lies within the undertakings Area of Direct Impact (ADI) is not eligible for the National Register. Your conclusion is based on the fact that this portion of the site contains little depth, no features, and a general lack of artifactual content. In addition based on information currently presented, the site within the ADI is not eligible under any other National Register criterion. I concur with your determination that the portion of site P-12-001824 which is located within the undertakings ADI is not eligible for the National Register. If the Tribes provide additional information why they believe the site is a traditional cultural property, I am willing to reconsider my concurrence in your determination. However based on the information presented, I do not object to a finding of no adverse effect with Standard Conditions.

If my staff can be of any further assistance, please contact Dwight Dutschke or Susan Stratton at 916-653-6624.

Sincerely,

Susan K Stratton for

Milford Wayne Donaldson, FAIA
State Historic Preservation Officer

Appendix G Results of Floristic Survey (7/26/07)

<i>Scientific name</i>	Common name
TREES	
<i>Acer macrophyllum</i>	big leaf maple
<i>Alnus rubra</i>	red alder
<i>Arbutus menziesii</i>	Pacific madrone
<i>Lithocarpus densiflorus</i>	tanoak
<i>Pseudotsuga menziesii</i> var. <i>menziesii</i>	Douglas-fir
<i>Quercus chrysolepis</i>	coast live oak
<i>Quercus garryana</i>	Oregon white oak
<i>Quercus kelloggii</i>	black oak
<i>Rhamnus purshiana</i>	cascara
<i>Sequoia sempervirens</i>	redwood
<i>Umbellularia californica</i>	California bay
SHRUBS	
<i>Aralia californica</i>	elkcllover
<i>Baccharis pilularis</i>	coyote brush
<i>Brickellia californica</i>	California brickell bush
<i>Corylus cornuta</i>	hazelnut
<i>Euonymus occidentalis</i>	western burning bush
<i>Fraxinus latifolia</i>	Oregon ash
<i>Fraxinus</i> sp.	ash
<i>Genista monspessulana</i>	French broom
<i>Heteromeles arbutifolia</i>	toyon
<i>Mimulus aurantiacus</i>	bush monkeyflower
<i>Quercus berberidifolia</i>	scrub oak
<i>Rhamnus californica</i>	California coffee berry
<i>Ribes menziesii</i>	gooseberry
<i>Rosa gymnocarpa</i>	wild rose

<i>Rubus discolor</i>	Himalayan blackberry
<i>Rubus leucodermis</i>	wild raspberry
<i>Rubus ursinus</i>	California blackberry
<i>Sambucus racemosa</i>	red elderberry
<i>Toxicodendron diversilobum</i>	poison oak
<i>Vaccinium ovatum</i>	evergreen huckleberry
FERNS & RELATIVES	
<i>Athyrium felix-femina</i>	maidenhair fern
<i>Equisetum hyemale</i>	giant scouring rush
<i>Equisetum telemetia</i>	common horsetail
<i>Pentagramma triangularis</i>	goldback fern
<i>Polypodium sp.</i>	polypody fern
<i>Polystichum munitum</i>	sword fern
<i>Pteridium aquilinum</i>	bracken fern
<i>Woodwardia fimbriata</i>	giant chain fern
GRASSES & RELATIVES	
<i>Agrostis sp.</i>	bentgrass
<i>Anthoxanthum odoratum</i>	sweet vernal grass
<i>Avena sp.</i>	wild oat
<i>Briza maxima</i>	rattlesnake grass
<i>Bromus vulgaris</i>	common brome
<i>Bromus sp.</i>	brome
<i>Carex deweyana</i>	Dewey's sedge
<i>Carex globosa</i>	round fruit sedge
<i>Carex harfordii</i>	sedge
<i>Carex obnupta</i>	slough sedge
<i>Cyperus eragrostis</i>	tall flatsedge
<i>Dactylis glomertata</i>	orchard grass
<i>Elymus sp.</i>	wildrye
<i>Festuca arundinacea</i>	tall fescue
<i>Hierchloe occidentalis</i>	California vanillagrass

<i>Holcus lanatus</i>	velvetgrass
<i>Juncus balticus</i>	Baltic rush
<i>Juncus patens</i>	common rush
<i>Phalaris sp.</i>	canarycrass
HERBS	
<i>Adenocaulon bicolor</i>	trail plant
<i>Anaphalis margaritacea</i>	pearly everlasting
<i>Brassica sp.</i>	wild mustard
<i>Calochortus sp. (vegetative)</i>	pussy ears
<i>Campanula prenanthoides</i>	California harebell
<i>Carduus pycnocephalia</i>	Italian thistle
<i>Centaurea solstitialis</i>	yellow star thistle
<i>Centuarium muehlenbergii</i>	centaury
<i>Cerastium sp.</i>	chickweed
<i>Chlorogalum pomeridianum</i>	soaproot
<i>Cichorium sp.</i>	chicory
<i>Cirsium vulgare</i>	bullthistle
<i>Claytonia perfoliata</i>	miner's lettuce
<i>Claytonia siberica</i>	candy flower
<i>Collomia heterophylla</i>	variable leaf collomia
<i>Conyza canadensis</i>	Canadian horseweed
<i>Cynosurus echinatus</i>	dogtail grass
<i>Daucus carota</i>	wild carrot
<i>Digitalis purpurea</i>	foxglove
<i>Disporum hookeri</i>	fairy bells
<i>Epilobium canum sp. latifolium</i>	California fushia
<i>Epilobium sp.</i>	willowherb
<i>Foeniculum vulgare</i>	wild fennel
<i>Fragaria vesca</i>	wild strawberry
<i>Galium sp.</i>	bedstraw
<i>Gnaphalium californicum</i>	everlasting

<i>Gnaphalium luteo-album</i>	everlasting
<i>Gnaphalium sp.</i>	everlasting
<i>Helenium bigelovii</i>	sneezeweed
<i>Heuchera micrantha</i>	alumroot
<i>Hieracium albiflorum</i>	hawkweed
<i>Hypericum perforatum</i>	St. Johnswort
<i>Hypochaeris radicata</i>	catsear
<i>Keckiella corymbosa</i>	redwood keckiella
<i>Lathyrus latifolius</i>	sweet pea
<i>Lathyrus vestitus</i>	pacific pea
<i>Lathyrus glandulosus</i>	sticky pea (CNPS List 4.3)
<i>Lonicera hispidula</i>	hairy honeysuckle
<i>Lotus corniculatus</i>	bird's foot trefoil
<i>Lotus sp.</i>	lotus
<i>Lychnis coronaria</i>	rose campion
<i>Madia radioides</i>	tarweed
<i>Madia sativa</i>	coast tarweed
<i>Melilotus alba</i>	white sweetclover
<i>Mentha pulgium</i>	pennyroyal
<i>Mimulus sp.</i>	monkeyflower
<i>Osmorhiza chilensis</i>	sweet cecily
<i>Oxalis oregana</i>	redwood sorrel
<i>Pedicularis densiflora</i>	indian warrior
<i>Petasites frigidus var. palmatus</i>	colts foot
<i>Phacelia sp.</i>	phacelia
<i>Plantago lanceolata</i>	narrow-leaf plantain
<i>Plantago major</i>	plantain
<i>Polygala californica</i>	milkwort
<i>Prunella vulgaris</i>	self-heal
<i>Rorippa nasturtium-aquaticum</i>	nasturtium
<i>Rumex acetosella</i>	sheep sorrel

<i>Rumex crispus</i>	curly dock
<i>Rumex salicifolius</i>	willow dock
<i>Sanicula crassicaulis</i>	sanicle
<i>Satureja douglasii</i>	yerba buena
<i>Sedum spathulifolium</i>	yellow stonecrop
<i>Smilacina racemosa</i>	western false Solomon's seal
<i>Sonchus oleraceus</i>	sow thistle
<i>Stachys sp.</i>	hedge nettle
<i>Stellaria media</i>	common chickweed
<i>Torilis arvensis</i>	bur
<i>Trientalis latifolius</i>	star-flower
<i>Trifolium repens</i>	white clover
<i>Trifolium sp.</i>	clover
<i>Trillium ovatum</i>	trillium
<i>Tritelleia laxa</i>	Ithuriel's spear
<i>Vancouveria sp.</i>	inside-out flower
<i>Vicia sp.</i>	vetch
<i>Vinca major</i>	periwinkle
<i>Viola glabella</i>	stream violet
<i>Viola sempervirens</i>	redwood violet
<i>Whipplea modesta</i>	whipplea

Appendix H Floodplain Evaluation

Floodplain Evaluation Report Summary (1)

Dist 01 Co. HUM Rte. 101 P.M. 1.2/2.2

Project No. 01-464800 Bridge No. N/A

Limits: PM 1.2/2.2

This project, located in Richardson Grove State Park, proposes to modify the non-standard roadway to accommodate STAA standard trucks. The improvements will also help other vehicles pass safely through the grove. Proposed work includes minor realignment at the south end of the project limits, an AC overlay in the mid section, and widening for two 12 ft lanes and 4 ft shoulders at the north end. Widening along the north will make use of a retaining wall.

Floodplain Description:

Highway 101 runs approximately parallel to the South Fork Eel River throughout the project limits. The watershed in this area is hilly and heavily wooded. State and National Parks are not mapped by FEMA. Richardson Grove State Park is shown on FEMA panel # 0600601850 B as Zone D, "Areas of undetermined but possible, flood hazards. Most of the project lies within Zone D, with a short segment on the north end lying in Zone C, "Areas of minimal flooding". No Base Floodplain or Base Floodplain Elevations have been established in this area.

- | | Yes | No |
|---|-------------------|-------------------|
| 1. Is the proposed action a longitudinal encroachment of the base floodplain? | <u> </u> | <u>X</u> |
| 2. Are the risks associated with the implementation of the proposed action significant as defined in 23 CFR, Section 650.105 (o)? | <u> </u> | <u>X</u> |
| 3. Does the proposed action constitute a significant floodplain encroachment as defined in 23 CFR, Section 650.105(q:1,2)? | <u> </u> | <u>X</u> |
| 4. Are Floodplain Studies that document the above answers on file? If no, explain. | <u>X</u> | <u> </u> |

Dawn Freund
Signature - Hydraulic Engineer, District 01



4/30/08
Date

- | | | |
|---|-------------------|----------|
| 1. Will the proposed action support probable incompatible floodplain development? | <u> </u> | <u>X</u> |
| 2. Are there any significant impacts on natural and beneficial floodplain values? | <u> </u> | <u>X</u> |
| 3. Routine construction procedures are required to minimize impacts on the floodplain. Are there any special mitigation measures necessary to minimize impacts or restore and preserve natural and beneficial floodplain values? If yes, explain. | <u> </u> | <u>X</u> |
| 4. Does the proposed action constitute a significant floodplain encroachment as defined in 23 CFR, Section 650.105(q:3)? | <u> </u> | <u>X</u> |
| 5. Are Location Hydraulics Studies that document the above answers on file? If no, explain <u>See Attached Sheet</u> | <u> </u> | <u>X</u> |

Deborah L. Harmon
Signature - Environmental Branch Chief

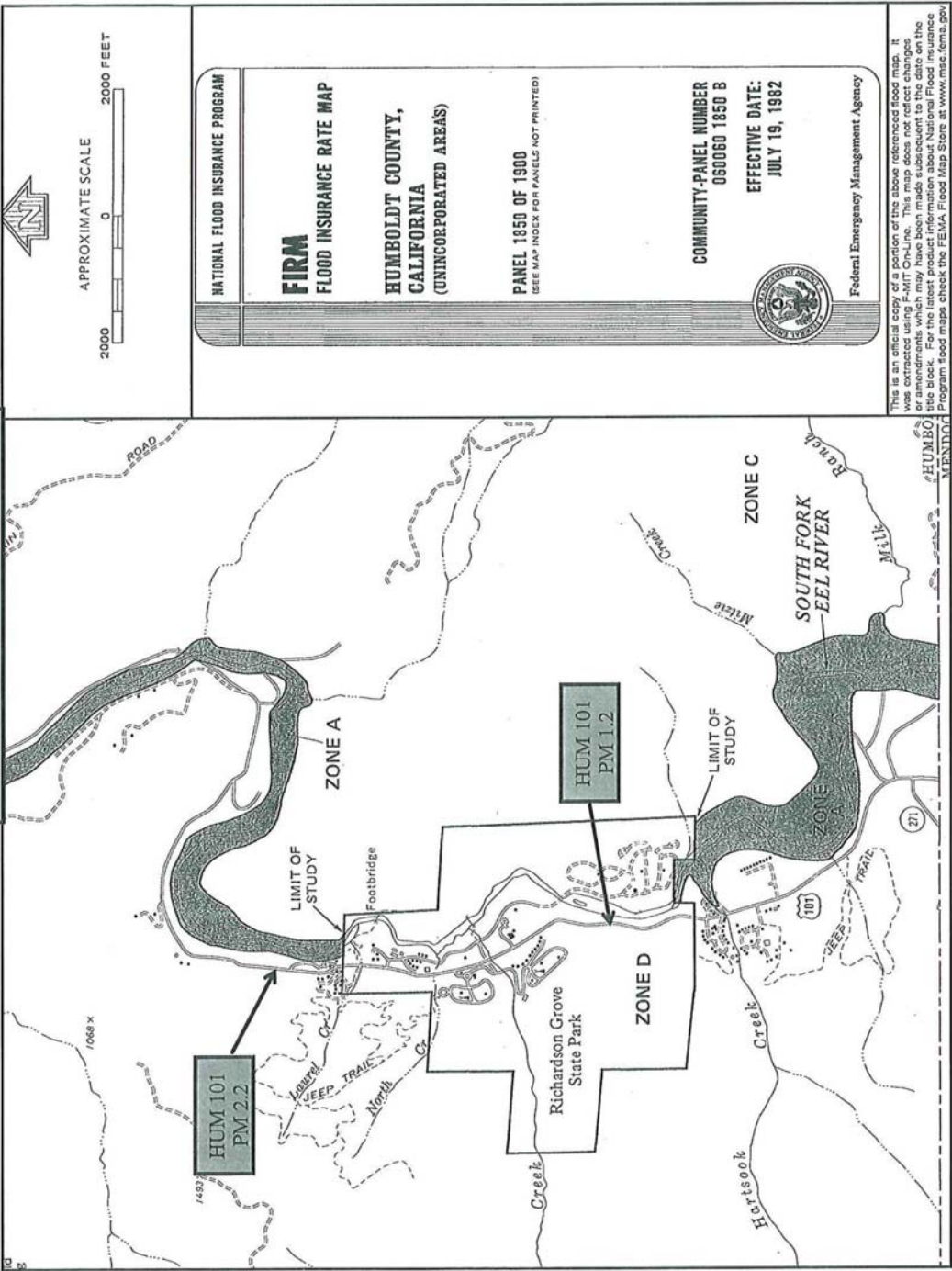
10/1/2008
Date

Concurrence: Eric Saml
Signature - Project Engineer

10/1/2008
Date

The project as planned will have no significant impact per 23 CFR, Section 650.105(q:3), therefore no Location Hydraulics Study is required.

01-464800 Hum_01 PM 1.2/2.2



Appendix I Natural Environment Study

The Natural Environment Study is included at the end of this document.

Appendix J Revegetation Plan

Golec/6-02-08

Richardson Grove Widening and Resurfacing Project Revegetation Proposal 01-HUM-101-PM 1.1/2.2 EA 01-46480

The following is an outline of the proposed revegetation activities associated with the Richardson Grove Widening and Resurfacing project between Post Mile 1.1 and 2.2 along State Route 101 in Humboldt County. A detailed revegetation plan will be drafted after a site visit and discussions between Caltrans Landscape Architecture and California State Parks staff to determine micro-site habitat influences, appropriate planting palettes, potential for plant salvaging, and planting and maintenance logistics.

Revegetation activities will be conducted in project areas with vegetation removal and soil disturbance, and planting will be focused in 3 locations in the project area (see Figure 1). Natural vegetation recruitment will be utilized in smaller and/or narrower impact areas where buffers for maintenance and roadside safety are required, however, weeding will be conducted in these areas to ensure native vegetation establishment. The proposed revegetation planting area is approximately 30,980 square feet (1.07 acres). The primary vegetation type impacted in the proposed planting areas is Redwood Forest with a minor component of Douglas-fir Forest (vegetation types based on California Natural Diversity Database dated September 2003).

Figure 1: Revegetation Planting Areas



The revegetation goal is to establish self-sustaining native vegetation cover in all strata similar to pre-project conditions in the impacted areas. The revegetation activities will consist of application of local native mulch for erosion control on disturbed soils, and in the three identified revegetation planting areas subsequent planting and maintenance of locally appropriate container and/or salvaged native plants. During project clearing activities, unusable logs and native woody debris will also be chipped and saved for soil amendment and revegetation mulching purposes.

The majority of the revegetation planting areas are within Redwood Forest, hence the planting palette will primarily utilize upland species associated within this vegetation type with some use of Douglas-fir Forest components (see Table 1). Additional site-specific considerations for the development of the planting palette are slope, aspect, exposure, soil moisture, and visual aesthetics.

Table 1: Potential Planting Palette

Scientific name	Common name
Tree Layer	
<i>Acer macrophyllum</i>	bigleaf maple
<i>Arbutus menziesii</i>	Pacific madrone
<i>Cornus nuttallii</i>	Pacific dogwood
<i>Lithocarpus densiflorus</i>	tan oak
<i>Pseudotsuga menziesii</i> var. <i>menziesii</i>	Douglas-fir
<i>Quercus chrysolepis</i>	coast live oak
<i>Rhamnus purshiana</i>	cascara
<i>Sequoia sempervirens</i>	coast redwood
Shrub Layer	
<i>Ceanothus integerrimus</i>	deerbrush
<i>Corylus cornuta</i> var. <i>californica</i>	California hazelnut
<i>Minulus aurantiacus</i>	bush monkeyflower
<i>Rhododendron macrophyllum</i>	California rose-bay
<i>Rosa gymnocarpa</i>	woodland rose
<i>Vaccinium ovatum</i>	evergreen huckleberry
Herbaceous Layer	
<i>Campanula prenanthoides</i>	California harebell
<i>Carex deweyana</i> ssp. <i>leptopoda</i>	Dewey's sedge
<i>Heuchera micrantha</i>	alumroot
<i>Hierchloe occidentalis</i>	California vanilla grass
<i>Iris douglasiana</i>	Douglas iris
<i>Lonicera hispidula</i> var. <i>vacillans</i>	hairy honeysuckle
<i>Oxalis oregana</i>	redwood sorrel
<i>Polygala californica</i>	milkwort
<i>Polypodium</i> sp.	polypody fern
<i>Polystichum munitum</i>	sword fern
<i>Vancouveria planipetala</i>	redwood inside-out flower
<i>Viola sempervirens</i>	redwood violet
<i>Whipplea modesta</i>	modesty

Plant material will need to be collected and outgrown to viable plant/root mass and container size, and it is proposed that California State Park's Shadowbrook Nursery in Whitethorn will collect and

outgrow the plant material for planting in the Fall 2010. Container plants will be deep watered immediately after planting (soils will be saturated beyond the first several inches), and mulched. Planted material will be monitored for mortality or poor vigor (less than 25% green material). Dead or poor vigor plants will be replaced in the fall to early spring if natural recruitment of native plants has not filled the planting area void, and will be identified in the field for a full maintenance schedule. A different native plant from Table 1 may be substituted in replacement planting if a species demonstrates an overall failure to thrive.

A water truck will be utilized for watering, and watering will be performed by hand (hose line and/or packed in via containers). Watering will be conducted for the first two dry summer seasons after initial planting (late May through early October) at an appropriate schedule directed by Caltrans Environmental and/or Landscape Architecture staff. No more than a two-year watering plan is proposed since long-term watering is not recommended for native plants that need to acclimate to natural site conditions.

Weed removal will be a necessary component of the revegetation effort due to ground disturbing activities and presence of invasive plants in the project area. Weed removal in the project area will utilize physical control methods (e.g. hand pulling), and will be conducted during the planting and plant establishment period (3 years) for non-native invasive species such as French broom (*Genista monspessulana*), fennel (*Foeniculum vulgare*), and perennial sweetpea (*Lathyrus latifolius*).

Revegetation planting, maintenance, and weeding will be contracted out to and performed by California Conservation Corps (CCC), and overseen by Caltrans Environmental and/or Landscape Architecture staff.

Revegetation monitoring will be conducted for three years following initial planting by Caltrans Environmental and/or Landscape Architecture staff. The monitoring goal is to ensure that the revegetation goal is met and provide a mechanism for corrective action if the goal is not being met. The monitoring methods will be qualitative and census monitoring coupled with permanent landscape photopoints. Any additional remedial or adaptive management measures undertaken to achieve the revegetation goal will be done under consultation with a qualified Biologist and/or Landscape Architect, as well as, the pertinent reviewing agencies. The monitoring results and photos will be summarized in a final report at the end of the three-year monitoring period, and distributed for review and approval to pertinent reviewing agencies.

Appendix K Visual Impact Assessment

To: Deborah Harmon
North Region Environmental Management

Date: 16 May 2008

File: 01-HUM-101
PM: 1.1/2.2
EA: 01-464800
Richardson Grove STAA

From: **Department of Transportation**
North Region - Landscape Architecture , Eureka

The following report has been prepared for the proposed STAA curve correction project on State Route 101 in Richardson Grove State Park in Humboldt County, California.

Project Description

Route 101 is the primary north-south route serving coastal California and is critical to the commerce of northwestern California. The existing Route 101 through Richardson Grove is a narrow two-lane road with large old growth redwood trees encroaching into the shoulders. Industry standard sized trucks conforming to the Surface Transportation Assistance Act (STAA) are currently prohibited from traveling Route 101 north of Leggett due to existing concerns at Confusion Hill and Richardson Grove. These restrictions are in place primarily because of concerns with the 'off-tracking' of these longer trucks when they travel around curves. The restrictions at Confusion Hill would be lifted with the completion of the Confusion Hill bypass in 2009. This would leave Richardson Grove as the only remaining location on Route 101 restricting access of STAA trucks traveling into Humboldt County from the south.

This project would adjust the roadway alignment to accommodate STAA truck travel through Richardson Grove. These improvements would eliminate the STAA restrictions at three curves and also help other vehicles safely travel through Richardson Grove. Improvement of goods movement would help local businesses stay competitive in the marketplace.

The project has been broken into three sections. Alterations to the existing landscape would only occur in sections 1 and 3. Improvements in the middle portion, section 2, would consist only of resurfacing the existing pavement. The primary modifications to the existing landscape include a small triangular shaped cut slope and a sliver fill slope near the south end of the grove and a two larger cut slopes towards the north end of the project limits outside the Park near Overpacks driveway and the Singing Trees Recovery Center. A soldier pile tieback wall is proposed at the location of the larger cut slope towards the north end of the project limits. The project scope includes the provision of 12' lanes and 2' shoulders where possible however large roadside redwoods located along the existing roadside would be preserved. In other locations, minor fill activity to allow for shoulder widening may be required. Old pavement not needed would be obliterated and removed from site.

Project Setting

The project area is located in the northern Coast Range approximately 1 mile north of the Humboldt/Mendocino county line. The highway is located on the top of a bluff overlooking the Eel River to the northeast and at the base of a mountain ridge to the southwest. The project site which is roughly 1.1 miles in length crosses through two ecotypes: old growth redwood forest and conifer/oak woodlands. The

southern half the project is located in Richardson Grove State Park which includes approximately 2,000 acres of old growth redwood forest managed by the California Department of Parks and Recreation. Richardson Grove is the first stand of old growth redwoods that travelers on Route 101 pass through while on their northbound trek from San Francisco to Eureka and the Oregon Coast. In this location, Route 101 tightly winds through an old growth redwood forest where in many locations, large redwood trees with a DBH of over 20 feet are located immediately adjacent to the edge of pavement. Other tree species such as Douglas-fir, big leaf maple, madrone, alder and tanoak grow along the highway edge and where small forest canopy openings provide partial sunlight that illuminates the dark dense forest floor. The northern half of the project is located outside of the park boundary in more of a commercial setting. Vegetation coverage in this area has been affected by development activities that have occurred since the highway was constructed. The dense old growth redwood forest has been thinned out and more sun tolerant trees have established where human and natural soil disturbance activities are minimal. Although redwoods, Douglas-fir, grand fir and big leaf maple are still the dominant species in this area, tanoaks and other sun and heat tolerant species have establish on the more exposed and disturbed soils such as the two locations where slope excavation activities are proposed.

The climate in the area is affected by a combination of the cool coastal zone and the warm Mediterranean climate common throughout most of inland California. Winters are often cool and rainy and the summers are warm and dry. The average high/low temperatures range from 87/52F during the summer and 49/37F in winter. The area receives an average of 69.5 inches of rainfall annually most of which occurs during the winter rainy season.

Scenic Resources

This section of Route 101 passes through Richardson Grove State Park. Richardson Grove along with several other reserves common along Route 101 protects some of the remaining stands of old growth redwood trees in the North Coast region. The most dominant scenic resource within the project limits are the old growth redwood forest. Massive old growth trees located immediately adjacent to the highway draw the full visual attention of all visitors who travel through this section of Route 101.

Between the town of Leggett and the Oregon border, Route 101 has been identified as 'Eligible' for scenic highway status on the California Scenic Highway System. The project area is located along a section of the South Fork Eel River, which has been designated as a Wild and Scenic River at the State and Federal Level. This portion of Route 101 is part of the Pacific Coast Bike Route.

Visual Impacts

Of the overall one mile length of the project limits, changes to the existing alignment are proposed for slightly more than half and would occur between PM 1.14/1.70 and PM 2.02/2.20. In these locations, cut and fill activities would be visible to the traveling public. A retaining wall is being proposed at the far northern cut slope outside of the park boundaries in order to minimize the amount of vegetation required for removal. A majority of the project scope entails subtle realignment of highway to improve curve radii. The alignment shift from the existing center line would be approximately 2 to 6 feet on average. Small saplings, brush and forbs, grasses, sorrels and ferns would be removed prior to realignment of the highway. Existing roadbed no longer required for the new alignment would obliterated, graded to a natural contour and covered with forest litter collected prior to construction.

The analysis of the visual impacts for the entire project is broken down into segments based on what is proposed. Thus a section of the highway where minor realignment requiring minimal impacts to existing vegetation is included in one segment and adjacent activities requiring noticeable cut or fill activities is discussed in a separate segment. Each segment is further broken down and analyzed into the left and right side of the highway when driving northbound on Route 101. The sub-segments are further broken

down where park trails, park facilities or commercial structures are located within the viewshed of the highway. In many instances, cut or fill slopes occur on one side of the highway while no or minimal activities occur on the opposite side of the highway. After impacts to the existing visual environment are identified, recommendations to minimize visual impacts are identified.

Each segment is identified by the beginning and ending Stations that mark the northern and southern boundaries where similar work would occur. Stationing is an engineering method for measuring distance in lieu of mile markers. Normally a project starts at Station 0+0 and increases in number as the distance from the starting point increases. The Station number to the left of the '+' symbol represents 100 feet in length and the number to the right of the '+' symbol is broken down to the nearest foot. Hence Station 1+20 would be 120 feet away from the Station 0+0.

Park Boundary

Stations between 60+0 to 65+55 (Post Mile 1.13 to 1.24) and 108+25 to 116+00 (Post Mile 2.05 to 2.19) are located outside of the Richardson Grove State Park boundary.

Stations between 65+55 (PM 1.24) and 108+25 (PM 2.05) are located within the Richardson Grove State Park boundary.

Station 60+0 to Station 63+40 (PM 1.13 to 1.2)

Only new overlay (asphalt paving) is proposed for this section of highway. No other activities such as widening, shoulders or new cut/fill slopes are proposed at this location. No existing vegetation would be impacted. There would be no impacts to the existing visual setting in this area.

Station 63+40 to Station 70+70 (PM 1.2 to 1.33)

New overlay (asphalt paving) is proposed for this section of highway. The highway would be slightly widened to provide for 2 foot shoulders where possible. Proposed shoulders would be tapered where existing trees are located adjacent to the edge of pavement. Existing vegetation located where cut and fill slopes are proposed would be removed prior to grading. Impacts to the existing visual setting in this area would be low due to the removal of roadside vegetation however, these impacts would be diminish as forest regeneration naturally occurs.

West –

Minor cut slope activities would be required in this section of highway. Although no major trees would be removed prior to slope excavation, some existing grasses, shrubs and seedlings may be impacted.

East –

Minor fill slope activities would be required in this section of highway. Although no major trees would be removed, some existing grasses, shrubs and seedlings may be impacted.

Recommendations -

Any viable tree seedlings that meet the needs of project revegetation tasks should be removed and transplanted to locations identified for planting. Seedlings and shrubs not suitable for planting activities should be chipped up and used for temporary or permanent erosion control requirements. The top 4 inches of duff (redwood tree litter) should be removed, stored at an approved location within the project limits and spread out on exposed slopes located within the Park boundaries after cut and fill grading activities are completed and the slopes are ready to receive permanent erosion control treatment. No hydro-seeding should occur in this area.

Station 70+70 to Station 71+50 (PM 1.33 to 1.35)

New overlay (asphalt paving) is proposed for this section of highway. The existing alignment will be shifted towards the west to accommodate STAA vehicles. The highway surface would be slightly widened to provide for 2 foot shoulders where possible. Proposed shoulders would be tapered where existing trees are located adjacent to the edge of pavement. Existing vegetation located where cut and fill

slopes are proposed would be removed prior to grading. The most noticeable change to the roadside would be a roadside cut on the west side that slightly increases an existing cut slope excavated when the highway was initially constructed. The dominant visual resource in this area is the dense stand of massive old growth redwoods that create the visual setting just beyond the proposed cut area. Shifting the highway 10 feet to the west would allow for an adequate curve correction while avoiding a cluster of large old growth redwoods located adjacent to the shoulder east of the highway at approximately Station 71+65.

Due to the density of trees in the immediate area, combined with the scale of the large old growth redwoods, visual impacts created by the removal of the triangular cluster of trees would be low to moderate. When driving through this section of roadway, the visual attention by most people would be drawn to the old growth redwoods located in the immediate area therefore the loss of trees in the triangular cut slope would be slightly noticeable. Covering the slope with forest duff and planting seedlings would further reduce the visual impact.

West –

A triangular cut is proposed on an existing cut slope. The existing cut slope has a steepness of approximately 1.5:1. The surface of the proposed cut slope would rise 40 feet uphill at its highest point from the roadway and would be 80 feet in length. The total area of the cut slope would be approximately 1650 ft². Existing vegetation cover including the proposed cut slope and the area extending several hundred feet up the hillside consists of densely spaced second growth forest that was cut in the past and regenerated over time. Most of the larger trees average 1 foot in diameter although there are two larger trees including a 22 inch DBH Douglas-fir on the proposed cut slope. Approximately thirteen trees and existing understory vegetation would be removed, the largest of which includes four Douglas-fir that range from 11 to 15 inches in DBH and three big leaf maple trees that are 17 to 22 inches in DBH. All vegetation located above the proposed triangular cut slope would remain.

The stand of second growth that includes the proposed cut slope and the slopes located above the cut allow some sunlight to illuminate the highway during the day, however much of this area is shaded by the dense canopy of adjacent old growth redwoods. Removal of the 13 trees would slightly increase the amount of sunlight that illuminates the highway from the southwest, however, remaining trees located above the cut slope would continue to provide partial shade. Most likely, the increase in natural lighting in the immediate area would be limited to certain times of the day and year (mid to late afternoon) when the solar angle meets the right conditions to illuminate the forest floor.



Location of triangular cut at Post Mile 1.34

East –

Minor fill activities would be required in this section of highway. Although no major trees would be removed prior to slope excavation, some existing grasses, shrubs and seedlings may be impacted.

Recommendations –

Any viable tree seedlings that meet the needs of project revegetation tasks should be removed and transplanted to locations identified for planting. Seedlings and shrubs not suitable for planting activities should be chipped up and used for temporary or permanent erosion control use. The top 4 inches of duff (redwood tree litter) should be removed, stored at an approved location within the project limits and spread out on exposed slopes located within the Park boundary. Collected duff (redwood tree litter) should be spread out on the disturbed slopes of the triangular cut slope. After construction activities are completed, the triangular cut slope should be planted with seedlings collected prior to construction. The seedling composition should be similar to what tree species were removed (Douglas-fir and big leaf maple).

Station 71+50 to Station 74+50 (PM 1.35 to 1.41)

New overlay (asphalt paving) is proposed for this section of highway. The highway would be slightly widened to provide for 2 foot shoulders where possible. Shoulders would be tapered as a measure to minimize impacts to existing trees located adjacent to the edge of pavement. A sliver fill would be constructed immediately parallel and east of the existing highway. Afterward, the proposed highway alignment would be shifted towards the east so the sliver fill becomes part of the northbound lane and shoulder. Existing roadway on the left side of the roadway not used for the new alignment would be obliterated, pavement removed and graded to blend in with the surrounding contour. The end result would be a slightly realigned highway that closely mimics the original alignment. When completed, the realignment of the roadway in this location would be barely noticeable. Although five trees would be removed, the dense old growth forest would still be the dominant visual feature of the highway in this location. Due to the density of trees in the immediate area, combined with the scale of the large old growth redwoods, visual impacts created by the removal of the trees in the sliver fill area would be low. Spreading of duff (redwood tree litter) on disturbed slopes would mask visual cues that recent construction activities has occurred and that there was originally part of a road beyond the left shoulder.



Location of sliver fill at Post Mile 1.35 to 1.40

West –

Shifting of the alignment away from the left side of the highway would not impact the visual quality of the roadside environment. Obliteration, pavement removal and grading to blend in with the surrounding contour with subsequent spreading of duff (redwood tree litter) would mask out any visual cues that the abandoned roadbed had existed in that location.

East –

A crescent shaped fill slope paralleling the existing roadway would be constructed in this location. The proposed fill area is level with the existing roadway and would be 250 feet in length and would be 1:1 to 1.5:1 in steepness in order to minimize impacts to surrounding vegetation.. The total area of the cut slope would be approximately 1100 ft². Five trees would be removed prior to excavating the cut slope. The largest of which includes a 18 inch and 19 inch DBH redwood. Other smaller seedlings, shrubs and groundcover species would need to be removed. The removal of the understory will partially open views of the highway from a park interpretation trail that is located approximately 50 feet east of the highway.

The most noticeable increase in views of the road from the trail will occur in the northern half of the sliver fill area where the understory is most dense. The understory is not as dense in the southern half of the sliver fill area. The forest floor in this area is deeply shaded by the old growth redwood canopy towering above the highway in this location. The tops of the trees identified for removal are well below the old growth redwood canopy therefore removal of these trees would not in any way increase the amount of sunlight that reaches the ground in this section of the forest.

Recommendations -

Any viable tree seedlings that meet the needs of project revegetation tasks should be removed and transplanted to locations identified for planting. Seedlings and shrubs not suitable for planting activities should be chipped up and used for temporary or permanent erosion control use. The top 4 inches of duff (redwood tree litter) should be removed, stored at an approved location within the project limits and spread out on exposed slopes located within the Park boundary. Collected duff (redwood tree litter) should be spread out on the disturbed slopes of the sliver fill. The fill slope should not be vegetated due to clear recovery requirements. The area adjacent to the sliver fill will not be planted at the request of the Department of Parks and Recreation. It is expected that native regeneration on the fill slope and areas where vegetation removal occurred would occur naturally.

Station 74+50 to Station 90+00 (PM 1.41 to 1.70)

New overlay (asphalt paving) is proposed for this section of highway. The highway would be slightly widened to provide for 2 foot shoulders where possible. Proposed shoulders would be tapered where existing trees are located adjacent to the edge of pavement when possible. There would be minor realignment of the existing roadway in places to smooth out curves. Five tanoaks ranging between 9 and 18 inches DBH would be removed. The tanoaks are located between Stations 87.64 and 88.70 which is near the intersection of Route 101 and the park entrance. Impacts to the existing visual setting in this area would be low due to the removal of roadside vegetation however, these impacts would be diminish as forest regeneration naturally occurs.

West –

Minor cut and fill slope activities would be required in this section of highway. Although no major trees would be removed prior to slope excavation, some existing grasses, shrubs and seedlings may be impacted.

East –

Minor cut and fill slope activities would be required in this section of highway. Although no major trees would be removed prior to slope excavation, some existing grasses, shrubs and seedlings may be impacted.

Recommendations -

Any viable tree seedlings that meet the needs of project revegetation tasks should be removed and transplanted to locations suitable for planting. Seedlings and shrubs not suitable for planting activities should be chipped up and used for temporary and permanent erosion control use. The top 4 inches of duff should be removed, stored at an approved location within the project limits and spread out on exposed slopes located within the Park boundaries after cut and fill grading activities are completed and the slopes are ready to receive erosion control treatment.

Station 90+00 to Station 107+00 (PM 1.70 to 2.02)

Only new overlay (asphalt paving) is proposed for this section of highway. No other activities such as widening, shoulders or new cut/fill slopes are proposed at this location. No existing vegetation would be impacted. There would be no impacts to the existing visual setting in this area.

Station 107+00 to Station 111+00 (PM 2.02 to 2.10)

New overlay (asphalt paving) is proposed for this section of highway. The highway would be widened to provide for 2 foot shoulders. The proposed alignment would be shifted approximately 10 feet into an existing cut slope. The roadway realignment would require the removal of all vegetation on the proposed cut slope. Vegetation coverage includes trees, shrubs and spotty groundcover. The tree canopy on the cut slope provides a moderate level of shade over the highway in this location. Removal of vegetation would cause the visual character of this area to be open and well sunlit during the daytime. Trees and vegetation on the right side of the road would remain and become the main vegetative focal point since the cut slope on the left side of the road would be barren of vegetation. Due to existing forest cover, the Eel River is not visible from the highway therefore there would be no impacts to the scenic status of the river.

This area is south of the Overpacks Grove Resort driveway and marks the transition between the dense old growth redwood viewscape prevalent in Richardson Grove State Park to the south and the commercial and residential landscape at this location and extending to the north.

Although there are some large old growth redwoods within the Singing Trees Recovery

Center property, most of the old growth redwoods in this area were cut over the past 100 years. Most of the trees and vegetation cover on the slope have pioneered since the old growth redwoods were cut. Tree species composition consists of approximately 70% tanoak, 24% Douglas-fir and 1% redwood. The loss of these trees on the left side of the highway would create a high impact to the visual quality to the highway corridor in this location. The combination of commercial and residential development and second growth forest cover in lieu of old growth redwood forest reduce the level of visual impacts from adverse to high.



Location of cut south of Overpacks Grove Resort driveway

West –

All existing vegetation including grasses, shrubs and seedlings and a 13+ foot DBH redwood stump. Currently existing vegetation moderately screen two cabins which are located on the left side of the highway 30 feet above the highway at the top of the cut slope. The surface of the proposed cut slope would rise 15 feet uphill at its highest point from the roadway and would be 300 feet in length. The total area of the cut slope would be approximately 3100 ft². The proposed top of cut would be 25 feet from nearest of the two cabins and the loss of vegetation would cause these structures to be clearly visible from the roadway. Subsequently, the roadway would be clearly visible from the cabins due to the loss of vegetative screening. The removal of the forest canopy will reduce the amount of shade the cabins experience in the morning when the sun is in the southeast.

East –

Minor cut and fill slope activities would be required in this section of highway. Although no major trees would be removed prior to slope excavation, some existing grasses, shrubs and seedlings may be

impacted. The removal of the forest canopy will reduce the amount of shade that Singing Trees and the highway experience in the afternoon when the sun is in the southwest.

Recommendations -

Any viable tree seedlings that meet the needs of project revegetation tasks should be removed and transplanted to locations suitable for planting. Seedlings and shrubs not suitable for planting activities should be chipped up and used for temporary or permanent erosion control use. After construction activities are completed, the cut slope should be planted with seedlings collected prior to construction. The seedling composition should be similar to what tree species were removed (Douglas-fir, tanoak and redwood).

Station 111+00 to Station 114+00 (PM 2.10 to 2.15)

New overlay (asphalt paving) is proposed for this section of highway. The highway would be widened to provide for 4 foot shoulders. The proposed alignment would be shifted approximately 4 feet into an existing cut slope starting north of the Overpacks Grove Resort driveway. The dominant visual feature in

this location would be a large soldier pile tieback wall which extends 300 feet in length. The proposed retaining wall would allow for the protection of existing vegetation which is located on the cut slope. Impacts to the visual character of the highway in this location due to the construction of the soldier pile tieback wall would be high however alternative of a large cut extending to the top of the slope and subsequent removal of all vegetation would have been much greater. The retaining wall allows for the preservation of most vegetation on the cut slope and would continue to screen views of the structures and utility corridor when seen from the highway. Conversely, the vegetation would continue to screen the highway when viewed from the structures.



Location of retaining wall north of Overpacks Grove Resort driveway

Although most of the redwoods in this area were cut over the past 100 years, there are at least 66 trees with a diameter of at least 4 inches located on the existing cut slope. They include forty-eight tan oak, two redwoods and seventeen Douglas-fir. Other smaller native plant species including trees under 4 inches in diameter, shrubs and grasses that cover the existing cut slope and would need to be removed as well. The tree canopy on the cut slope provides a moderate level of shade over the highway in this location. Removal of vegetation would cause the visual character of this area to be open and well sunlit during the daytime. Trees and vegetation on the right side of the road would remain and become the main vegetative focal point. There are four structures and a utility line located near the top of the cut slope. Existing vegetation partially screens these structures from the highway. Depending on the amount of vegetation removed would dictate to what level the structures would become more visible.

West –

The main feature on this side of the highway would be a large soldier pile retaining wall. The soldier pile wall would consist of vertical steel I-beams with large timber infill. A concrete safety barrier would be located at the base of the retaining wall for the entire length of the structure. The wall would be approximately 300 feet in length and located approximately 8 feet from the edge of traveled way (fog line).

The wall would have a maximum height of 17 feet and a little more than half of the wall would rise at least 13 feet above the highway. Between Stations 112+35 and 112+75, the wall would decrease in height due to changes in the local topography. At the lowest point (Station 112+55), the wall would rise 7 feet above the highway. Approximately 20 tan oak would be removed prior to the construction of the retaining wall.



Similar type of retaining wall located in Del Norte Redwoods State Park

East –

Minor fill activities would be required in this section of highway. Although no major trees would be removed prior to slope excavation, some existing grasses, shrubs and seedlings may be impacted.

Recommendations -

Any viable tree seedlings that meet the needs of project revegetation tasks should be removed and transplanted to locations suitable for planting. Seedlings and shrubs not suitable for planting activities should be chipped up and used for temporary or permanent erosion control use. After construction activities are completed, the area above the retaining wall should be planted with seedlings collected prior to construction. The seedling composition should be similar to what tree species were removed (Douglas-fir, tan oak and redwood).

Station 114+00 to Station 116+00 (PM 2.15 to 2.19)

The highway would be slightly widened to provide for 4 foot shoulders where possible. Proposed shoulders would be tapered where existing trees are located adjacent to the edge of pavement. Existing vegetation located where cut and fill slopes are proposed would be removed prior to grading.

West –

Minor cut activities would be required in this section of highway. Although no major trees would be removed prior to slope excavation, some existing grasses, shrubs and seedlings may be impacted.

East –

Minor fill activities would be required in this section of highway. Although no major trees would be removed prior to slope excavation, some existing grasses, shrubs and seedlings may be impacted.

Recommendations -

Any viable tree seedlings that meet the needs of project revegetation tasks should be removed and transplanted to locations suitable for planting. Seedlings and shrubs not suitable for planting activities should be chipped up and used for temporary or permanent erosion control use.

Summary of Project Impacts

Existing visual quality of Route 101 within the project area is very high, due primarily to the natural vegetation including an old growth redwood forest, topography, highway facility and other park related elements. The main visual detractors within the project vicinity will be minor cut and fill activities and vegetation removal within Richardson Grove State Park; and a large cut slope and retaining wall adjacent to the Overpacks driveway outside of the park boundary.

Affected viewers are those who travel the highway and are in the immediate vicinity of the project. Viewers through this area generally have a very high expectation regarding scenic quality. Below are the results of the analysis from Attachments 1, located at the end of this report.

Viewshed	Existing Visual Quality Value 1=Low, 7=High (values are rounded)	Proposed Visual Quality Value 1=Low, 7=High (values are rounded)	Net Change in Visual Quality Value (rounded)
1 (From Highway)	6.19	6.19	0.0
2 (From Highway)	7.0	7.0	0.0
3 (From Highway)	7.0	6.91	-0.09
3 (From Trail)	6.86	6.79	-0.07
4 (From Highway)	7.0	6.99	-0.01
4 (From Trail)	6.86	6.86	0.0
5 (From Highway)	7.0	6.99	-0.01
6 (From Highway)	7.0	7.0	0.0
6 (From Park Facility)	6.86	6.78	-0.08
7 (From Highway)	6.03	5.18	-0.85
7 (From Overpacks/Singing Trees)	6.03	5.14	-0.89
8 (From Highway)	6.03	4.99	-1.04
8 (From Residences)	6.03	6.01	-0.02
9 (From Highway)	6.25	6.25	0.0

The project will result in a low to moderate alteration of the visual environment within Richardson Grove State Park and a moderate to high alteration of the visual environment north of the park boundary.

Conclusion:

The overall impacts to the visual quality of the highway within the project limits are acceptable. When analyzing the visual changes created by this project, the project scope needs to be broken down into two halves. The area located within the Richardson Grove State Park boundaries and the curve corrections located in the commercial area north and south of the Overpacks Grove Resort driveway. Impacts to the visual setting within Richardson Grove State Park would be low to moderate due to the minimal area where vegetation removal is to occur and cut and fill activities are to occur. When looking at the highway within the Park boundaries, the visual character of the highway is a slow curvy road with large old growth redwoods dominating the landscape. After this project, the highway would still be a slow curvy road with large old growth redwoods dominating the landscape.

Although 23 large trees would be removed between the triangular cut slope and sliver fill, the visual quality of the dense old growth redwood forest would be minimally impacted. The loss of trees on the triangular cut slope is similar to what may occur when an old growth redwood tree falls during a wind event. After an event of that nature occurs, other small trees in the immediate area are quick to react to the small opening in the canopy. A small 12 inch DBH redwood tree adjacent to the downed old growth tree would be quick to react and grow to fill in the canopy before competing trees nearby are able to react. The combination of spreading duff (redwood tree litter) and planting the triangular cut slope with seedlings similar to the species that were removed would over time diminish impacts created by the initial removal of the existing trees. Impacts created by sliver fill activities are minimal. The loss of the seven trees would not be noticeable since the dominant visual element on that side of the road are the large redwoods located adjacent to the area that would be impacted by construction activities. The roadside would still be dominated by large redwood trees immediately adjacent or within close proximity to the edge of pavement.

The area where visual impacts would be the greatest would be north and south of the Overpack's Grove Resort outside of the Richardson Grove State Park boundary. To the south of the driveway, the cut slope and loss of trees to the left of the highway would diminish the visual setting which is a somewhat open mixed conifer forest. Although all the trees to the right of the highway would remain, the loss of treescape and forest overstory would change the character of the highway along this section of highway. The roadway and roadsides would now receive direct sunlight whereas before, the ground was shaded by the forest canopy during most parts of the day.

The dominant feature of the entire project would be the construction of the soldier pile retaining wall north of the Overpack's Grove Resort. The scale the retaining wall create a high visual impact however the alternative of a large cutslope and removal of all trees to the left of the highway would have impacted the viewshed to a greater level and the natural view is compromised with the Singing Trees structures on the opposite side of the highway. The retaining wall allows for the protection of most trees on the cutslope and subsequently reduces the loss of forest canopy above the highway. The ground in this area would now experience sunlight during the first half of the day however remaining canopy on the cut slope would continue to provide shade during the afternoon.

If you have any questions or need additional assistance, please do not hesitate to call me at 707.441.3974.

Jim Hibbert, Landscape Architect
North Region – Office of Landscape Architecture - Eureka

Addendum 1
Viewshed Analysis for Richardson Grove STAA Project
01-464800 ---- HUM 101 ---- Post Mile 1.2/2.2

Viewshed 1 – Station 60+0 to Station 63.40 (Post Mile 1.13 to 1.2)

Views from Highway

VISUAL QUALITY ANALYSIS EXISTING		Evaluation Scale 1-7 1=Very Low, 7= Very High	
VIEWSHED	VIVIDNESS (V)	INTACTNESS (I)	UNITY (U)

1	Manmade Development	6.5	Absence of Encroachment	6.0	Man-made /Natural	6.5
	Vegetation	5.0	Overall Intactness	6.5	Overall Unity	6.5
	Water	N/A	AVERAGE I	6.25	AVERAGE U	6.5
	Landform	6.0	Viewer Sensitivity Ranking (1-3)	1=Low, 3=High 3		
	AVERAGE V	5.833	Visual Quality $= (V+I+U)/3$	6.194		
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Viewshed 1 – Station 60+0 to Station 63.40 (Post Mile 1.13 to 1.2)

Views from Highway

VISUAL QUALITY ANALYSIS PROPOSED			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	6.5	Absence of Encroachment	6.0	Man-made /Natural	6.5
	Vegetation	5.0	Overall Intactness	6.5	Overall Unity	6.5
	Water	N/A	AVERAGE I	6.25	AVERAGE U	6.5
	Landform	6.0	Viewer Sensitivity Ranking (1-3)	1=Low, 3=High 3		
	AVERAGE V	5.833	Visual Quality $= (V+I+U)/3$	6.194		
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Viewshed 2 – Station 63+40 to Station 70.70 (Post Mile 1.2 to 1.33)

Views from Highway

VISUAL QUALITY ANALYSIS EXISTING			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	7.0	Absence of Encroachment	7.0	Man-made /Natural	7.0
	Vegetation	7.0	Overall Intactness	7.0	Overall Unity	7.0
	Water	N/A	AVERAGE I	7.0	AVERAGE U	7.0
	Landform	7.0	Viewer Sensitivity Ranking (1-3)	1=Low, 3=High 3		
	AVERAGE V	7.0	Visual Quality $= (V+I+U)/3$	7.0		
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Viewshed 2 – Station 63+40 to Station 70.70 (Post Mile 1.2 to 1.33)

Views from Highway

VISUAL QUALITY ANALYSIS PROPOSED			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	6.9	Absence of Encroachment	6.9	Man-made /Natural	7.0
	Vegetation	6.9	Overall Intactness	6.9	Overall Unity	7.0
	Water	N/A	AVERAGE I	6.9	AVERAGE U	7.0
	Landform	6.9	Viewer Sensitivity Ranking (1-3)		1=Low, 3=High	3
	AVERAGE V	6.9	Visual Quality =(V+I+U)/3		6.933	
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Viewshed 3 – Station 70+70 to Station 71.50 (Post Mile 1.33 to 1.35)

Views from Highway

VISUAL QUALITY ANALYSIS EXISTING			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	7.0	Absence of Encroachment	7.0	Man-made /Natural	7.0
	Vegetation	7.0	Overall Intactness	7.0	Overall Unity	7.0
	Water	N/A	AVERAGE I	7.0	AVERAGE U	7.0
	Landform	7.0	Viewer Sensitivity Ranking (1-3)		1=Low, 3=High	3
	AVERAGE V	7.0	Visual Quality =(V+I+U)/3		7.0	
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Viewshed 3 – Station 70+70 to Station 71.50 (Post Mile 1.33 to 1.35)

Views from Highway

VISUAL QUALITY ANALYSIS PROPOSED			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	

1	Manmade Development	7.0	Absence of Encroachment	6.9	Man-made /Natural	6.9
	Vegetation	6.9	Overall Intactness	6.9	Overall Unity	6.9
	Water	N/A	AVERAGE I	6.9	AVERAGE U	6.9
	Landform	6.9	Viewer Sensitivity Ranking (1-3)	1=Low, 3=High 3		
	AVERAGE V	6.933	Visual Quality $= (V+I+U)/3$	6.911		
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Viewshed 3 – Station 70+70 to Station 71.50 (Post Mile 1.33 to 1.35)
Views from Nature Trail Extending South from Visitor Center (East of HUM 101)

VISUAL QUALITY ANALYSIS EXISTING			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	6.0	Absence of Encroachment	6.9	Man-made /Natural	7.0
	Vegetation	7.0	Overall Intactness	6.9	Overall Unity	7.0
	Water	N/A	AVERAGE I	6.9	AVERAGE U	7.0
	Landform	7.0	Viewer Sensitivity Ranking (1-3)	1=Low, 3=High 3		
	AVERAGE V	6.666	Visual Quality $= (V+I+U)/3$	6.855		
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Viewshed 3 – Station 70+70 to Station 71.50 (Post Mile 1.33 to 1.35)
Views from Nature Trail Extending South from Visitor Center (East of HUM 101)

VISUAL QUALITY ANALYSIS PROPOSED			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	6.0	Absence of Encroachment	6.8	Man-made /Natural	6.9
	Vegetation	6.9	Overall Intactness	6.8	Overall Unity	7.0
	Water	N/A	AVERAGE I	6.8	AVERAGE U	6.95
	Landform	7.0	Viewer Sensitivity Ranking (1-3)	1=Low, 3=High 3		
	AVERAGE V	6.933	Visual Quality $= (V+I+U)/3$	6.794		
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Viewshed 4 – Station 71+50 to Station 74.50 (Post Mile 1.35 to 1.41)

Views from Highway

VISUAL QUALITY ANALYSIS EXISTING			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	7.0	Absence of Encroachment	7.0	Man-made /Natural	7.0
	Vegetation	7.0	Overall Intactness	7.0	Overall Unity	7.0
	Water	N/A	AVERAGE I	7.0	AVERAGE U	7.0
	Landform	7.0	Viewer Sensitivity Ranking (1-3)		1=Low, 3=High	3
	AVERAGE V	7.0	Visual Quality $= (V+I+U)/3$		7.0	
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Viewshed 4 – Station 71+50 to Station 74.50 (Post Mile 1.35 to 1.41)

Views from Highway

VISUAL QUALITY ANALYSIS PROPOSED			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	7.0	Absence of Encroachment	7.0	Man-made /Natural	7.0
	Vegetation	6.9	Overall Intactness	7.0	Overall Unity	7.0
	Water	N/A	AVERAGE I	7.0	AVERAGE U	7.0
	Landform	7.0	Viewer Sensitivity Ranking (1-3)		1=Low, 3=High	3
	AVERAGE V	6.966	Visual Quality $= (V+I+U)/3$		6.988	
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Viewshed 4 – Station 71+50 to Station 74.50 (Post Mile 1.35 to 1.41)

Views from Nature Trail Extending North from Visitor Center (East of HUM 101)

VISUAL QUALITY ANALYSIS EXISTING			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	6.0	Absence of Encroachment	6.9	Man-made /Natural	7.0

	Vegetation	7.0	Overall Intactness	6.9	Overall Unity	7.0
	Water	N/A	AVERAGE I	6.9	AVERAGE U	7.0
	Landform	7.0	Viewer Sensitivity Ranking (1-3)	1=Low, 3=High 3		
	AVERAGE V	6.666	Visual Quality $= (V+I+U)/3$	6.855		
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Viewshed 4 – Station 71+50 to Station 74.50 (Post Mile 1.35 to 1.41)
Views from Nature Trail Extending North from Visitor Center (East of HUM 101)

VISUAL QUALITY ANALYSIS PROPOSED			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	6.0	Absence of Encroachment	6.9	Man-made /Natural	7.0
	Vegetation	7.0	Overall Intactness	6.9	Overall Unity	7.0
	Water	N/A	AVERAGE I	6.9	AVERAGE U	7.0
	Landform	7.0	Viewer Sensitivity Ranking (1-3)	1=Low, 3=High 3		
	AVERAGE V	6.666	Visual Quality $= (V+I+U)/3$	6.855		
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Viewshed 5 – Station 74+50 to Station 90.00 (Post Mile 1.41 to 1.70)

Views from Highway

VISUAL QUALITY ANALYSIS EXISTING			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	7.0	Absence of Encroachment	7.0	Man-made /Natural	7.0
	Vegetation	7.0	Overall Intactness	7.0	Overall Unity	7.0
	Water	N/A	AVERAGE I	7.0	AVERAGE U	7.0
	Landform	7.0	Viewer Sensitivity Ranking (1-3)	1=Low, 3=High 3		
	AVERAGE V	7.0	Visual Quality $= (V+I+U)/3$	7.0		
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Viewshed 5 – Station 74+50 to Station 90.00 (Post Mile 1.41 to 1.70)

Views from Highway

VISUAL QUALITY ANALYSIS PROPOSED			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	7.0	Absence of Encroachment	7.0	Man-made /Natural	7.0
	Vegetation	6.9	Overall Intactness	7.0	Overall Unity	7.0
	Water	N/A	AVERAGE I	7.0	AVERAGE U	7.0
	Landform	7.0	Viewer Sensitivity Ranking (1-3)		1=Low, 3=High 3	
	AVERAGE V	6.966	Visual Quality =(V+I+U)/3		6.988	
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Viewshed 6 – Station 90+00 to Station 107.00 (Post Mile 1.7 to 2.02)

Views from Highway

VISUAL QUALITY ANALYSIS EXISTING			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	7.0	Absence of Encroachment	7.0	Man-made /Natural	7.0
	Vegetation	7.0	Overall Intactness	7.0	Overall Unity	7.0
	Water	N/A	AVERAGE I	7.0	AVERAGE U	7.0
	Landform	7.0	Viewer Sensitivity Ranking (1-3)		1=Low, 3=High 3	
	AVERAGE V	7.0	Visual Quality =(V+I+U)/3		7.0	
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Viewshed 6 – Station 90+00 to Station 107.00 (Post Mile 1.7 to 2.02)

Views from Highway

VISUAL QUALITY ANALYSIS PROPOSED			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	7.0	Absence of Encroachment	7.0	Man-made /Natural	7.0

	Vegetation	7.0	Overall Intactness	7.0	Overall Unity	7.0
	Water	N/A	AVERAGE I	7.0	AVERAGE U	7.0
	Landform	7.0	Viewer Sensitivity Ranking (1-3)	1=Low, 3=High 3		
	AVERAGE V	7.0	Visual Quality $= (V+I+U)/3$	7.0		
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Viewshed 6 – Station 90+00 to Station 107.00 (Post Mile 1.7 to 2.02)
Views from Park Maintenance Facilities (East of HUM 101)

VISUAL QUALITY ANALYSIS EXISTING			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	6.0	Absence of Encroachment	6.9	Man-made /Natural	7.0
	Vegetation	7.0	Overall Intactness	6.9	Overall Unity	7.0
	Water	N/A	AVERAGE I	6.9	AVERAGE U	7.0
	Landform	7.0	Viewer Sensitivity Ranking (1-3)	1=Low, 3=High 3		
	AVERAGE V	6.666	Visual Quality $= (V+I+U)/3$	6.855		
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Viewshed 6 – Station 90+00 to Station 107.00 (Post Mile 1.7 to 2.02)
Views from Park Maintenance Facilities (East of HUM 101)

VISUAL QUALITY ANALYSIS PROPOSED			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	5.9	Absence of Encroachment	6.8	Man-made /Natural	6.9
	Vegetation	6.9	Overall Intactness	6.8	Overall Unity	7.0
	Water	N/A	AVERAGE I	6.8	AVERAGE U	6.95
	Landform	7.0	Viewer Sensitivity Ranking (1-3)	1=Low, 3=High		
	AVERAGE V	6.6	Visual Quality $= (V+I+U)/3$	6.783		
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Viewshed 7 – Station 107+00 to Station 111.00 (Post Mile 2.02 to 2.1)

Views from Highway

VISUAL QUALITY ANALYSIS EXISTING			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	5.5	Absence of Encroachment	6.0	Man-made /Natural	6.0
	Vegetation	6.0	Overall Intactness	6.0	Overall Unity	6.5
	Water	N/A	AVERAGE I	6.0	AVERAGE U	6.25
	Landform	6.0	Viewer Sensitivity Ranking (1-3)		1=Low, 3=High	3
	AVERAGE V	5.833	Visual Quality =(V+I+U)/3		6.027	
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Viewshed 7 – Station 107+00 to Station 111.00 (Post Mile 2.02 to 2.1)

Views from Highway

VISUAL QUALITY ANALYSIS PROPOSED			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	5.5	Absence of Encroachment	5.0	Man-made /Natural	5.0
	Vegetation	5.0	Overall Intactness	5.5	Overall Unity	5.25
	Water	N/A	AVERAGE I	5.25	AVERAGE U	5.125
	Landform	5.0	Viewer Sensitivity Ranking (1-3)		1=Low, 3=High	3
	AVERAGE V	5.166	Visual Quality =(V+I+U)/3		5.180	
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Viewshed 7 – Station 107+00 to Station 111.00 (Post Mile 2.02 to 2.1)

Views from Overpacks (West of HUM 101) and Singing Trees (East of HUM 101)

VISUAL QUALITY ANALYSIS EXISTING			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	

1	Manmade Development	5.5	Absence of Encroachment	6.0	Man-made /Natural	6.0
	Vegetation	6.0	Overall Intactness	6.0	Overall Unity	6.5
	Water	N/A	AVERAGE I	6.0	AVERAGE U	6.25
	Landform	6.0	Viewer Sensitivity Ranking (1-3)	1=Low, 3=High 3		
	AVERAGE V	5.833	Visual Quality $= (V+I+U)/3$	6.027		
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Viewshed 7 – Station 107+00 to Station 111.00 (Post Mile 2.02 to 2.1)
Views from Overpacks (West of HUM 101) and Singing Trees (East of HUM 101)

VISUAL QUALITY ANALYSIS PROPOSED			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	5.5	Absence of Encroachment	5.0	Man-made /Natural	5.0
	Vegetation	5.0	Overall Intactness	5.5	Overall Unity	5.0
	Water	N/A	AVERAGE I	5.25	AVERAGE U	5.0
	Landform	5.0	Viewer Sensitivity Ranking (1-3)	1=Low, 3=High 3		
	AVERAGE V	5.166	Visual Quality $= (V+I+U)/3$	5.138		
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Viewshed 8 – Station 111+00 to Station 114.00 (Post Mile 2.1 to 2.15)
Views from Highway

VISUAL QUALITY ANALYSIS EXISTING			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	5.5	Absence of Encroachment	6.0	Man-made /Natural	6.0
	Vegetation	6.0	Overall Intactness	6.0	Overall Unity	6.5
	Water	N/A	AVERAGE I	6.0	AVERAGE U	6.25
	Landform	6.0	Viewer Sensitivity Ranking (1-3)	1=Low, 3=High 3		
	AVERAGE V	5.833	Visual Quality $= (V+I+U)/3$	6.027		
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Viewshed 8 – Station 111+00 to Station 114.00 (Post Mile 2.1 to 2.15)

Views from Highway

VISUAL QUALITY ANALYSIS PROPOSED			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	5.0	Absence of Encroachment	5.0	Man-made /Natural	4.75
	Vegetation	5.0	Overall Intactness	5.5	Overall Unity	5.0
	Water	N/A	AVERAGE I	5.25	AVERAGE U	4.875
	Landform	4.5	Viewer Sensitivity Ranking (1-3)		1=Low, 3=High	3
	AVERAGE V	4.833	Visual Quality =(V+I+U)/3		4.986	
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Viewshed 8 – Station 111+00 to Station 114.00 (Post Mile 2.1 to 2.15)

Views From Residences at Top of Cut Slope (West of HUM 101)

VISUAL QUALITY ANALYSIS EXISTING			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	5.5	Absence of Encroachment	6.0	Man-made /Natural	6.0
	Vegetation	6.0	Overall Intactness	6.0	Overall Unity	6.5
	Water	N/A	AVERAGE I	6.0	AVERAGE U	6.25
	Landform	6.0	Viewer Sensitivity Ranking (1-3)		1=Low, 3=High	3
	AVERAGE V	5.833	Visual Quality =(V+I+U)/3		6.027	
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Viewshed 8 – Station 111+00 to Station 114.00 (Post Mile 2.1 to 2.15)

Views From Residences at Top of Cut Slope (West of HUM 101)

VISUAL QUALITY ANALYSIS PROPOSED			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	5.5	Absence of Encroachment	5.5	Man-made /Natural	5.5

	Vegetation	5.75	Overall Intactness	5.75	Overall Unity	6.0
	Water	N/A	AVERAGE I	5.625	AVERAGE U	5.75
	Landform	5.75	Viewer Sensitivity Ranking (1-3)	1=Low, 3=High 3		
	AVERAGE V	5.666	Visual Quality $= (V+I+U)/3$	6.013		
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Viewshed 9 – Station 114+00 to Station 116.00 (Post Mile 2.15 to 2.19)

Views from Highway

VISUAL QUALITY ANALYSIS EXISTING			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	5.5	Absence of Encroachment	6.0	Man-made /Natural	6.0
	Vegetation	6.0	Overall Intactness	6.0	Overall Unity	6.5
	Water	N/A	AVERAGE I	6.0	AVERAGE U	6.25
	Landform	6.0	Viewer Sensitivity Ranking (1-3)	1=Low, 3=High 3		
	AVERAGE V	5.833	Visual Quality $= (V+I+U)/3$	6.25		
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Viewshed 9 – Station 114+00 to Station 116.00 (Post Mile 2.15 to 2.19)

Views from Highway

VISUAL QUALITY ANALYSIS PROPOSED			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	5.5	Absence of Encroachment	6.0	Man-made /Natural	6.0
	Vegetation	6.0	Overall Intactness	6.0	Overall Unity	6.5
	Water	N/A	AVERAGE I	6.0	AVERAGE U	6.25
	Landform	6.0	Viewer Sensitivity Ranking (1-3)	1=Low, 3=High 3		
	AVERAGE V	5.833	Visual Quality $= (V+I+U)/3$	6.25		
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Appendix L Layout Maps
